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Memoir 15

WILD FLOWERS OF NEW YORK

IN TWO PARTS

BY

HOMER D. HOUSE

State Botanist

Part 2

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ALBANY

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Evening Primrose Family

Epilobiaceae

(Onagraceae)

Seedbox; Rattlebox

Ludwigia alternifolia Linnaeus

Plate 144b

Stems erect or nearly erect, branching, 1½ to 3 feet high, from a perennial root which often bears small tubers; the stems smooth or minutely pubescent and more or less angled. Leaves alternate, lanceolate or linear-lanceolate, pointed at both ends, on very short petioles, 1½ to 4 inches long. Flowers solitary in the axils of the leaves, each flower one-half to two-thirds of an inch broad, on short stalks; the calyx tube short, rounded at the base with four ovate, long-pointed lobes about as long as the four yellow petals which fall away very easily when the plant is disturbed. Fruiting capsule smooth and slightly wing-angled, about one-fourth of an inch high, opening by an apical pore but finally also dehiscent; many seeded.

In marshes, swamps and wet meadows, New Hampshire to Ontario, Michigan and Kansas, south to Florida and Texas. Flowering from the latter part of June to September.

Fireweed; Great or Spiked Willow-herb

Chamaenerion angustifolium (Linnaeus) Scopoli

Plate 144b

Stems slender or rather stout, 2 to 7 feet high, from a perennial root, smooth below, usually finely pubescent above. Leaves alternate, lanceolate, finely toothed or entire, 2 to 7 inches long, one-third to 1 inch wide, the upper ones smaller, all on very short petioles, long pointed at the apex, thin, the lateral veins joining one another in marginal loops. Flowers

purple, rarely white, three-fourths to 1½ inches broad in elongated, terminal, spikelike racemes; calyx tube cylindric, inclosing the ovary, four-lobed at the apex; petals four, obovate; stamens eight; capsules or fruit 2 to 3 inches long and about one-eighth of an inch thick, finely canescent; seeds numerous, small, with a long, whitish tuft of hairs.

In dry soil, usually on recently cleared or burned-over woodlands, Greenland to Alaska, south to North Carolina, Indiana, Kansas, Rocky mountains and California. Also in Europe and Asia. Flowering from July to September.

Great Hairy Willow-herb

Epilobium hirsutum Linnaeus

Plate 144a

Stems stout and softly hairy, 2 to 5 feet high from perennial roots, propagating by underground shoots. Leaves usually opposite, sometimes alternate, oblong-lanceolate to lanceolate, sessile or even clasping the stem at the base, pointed at the apex, sharply but finely toothed on the margins, 1 to 4 inches long, one-third to one-half of an inch wide, thin and pubescent. Flowers rose-purple, three-fourths to 1 inch broad, in the axils of the upper leaves; calyx tube linear with four deciduous lobes or sepals at its summit; petals broadly obovate and notched at the apex, pubescent within at the base. Stigma deeply four-lobed; stamens eight. Fruiting capsule 2 to 3 inches long and very slender, with numerous small seeds each provided with a tuft of whitish hairs.

A native of Europe which, like the Purple Loosestrife, is thoroughly naturalized in marshes, swamps and ditches throughout the eastern states, especially about the larger cities, towns and ports. Flowering from July to September.

The other species of Epilobium in New York are chiefly inconspicuous, small-flowered marsh herbs, two of them very rare Alpine species of the higher Adirondacks, the other four being inhabitants of swamps and bogs at lower altitudes. Of these, the commonest in most localities is the Northern Willow-herb (E p i l o b i u m a d e n o c a u l o n Haussknecht).

A. GREAT HAIRY WILLOW-HERB
Epilobium hirsutum

B. FIREWEED; GREAT OR SPIKED WILLOW-HERB
Chamaenerion angustifolium

Common Evening Primrose

Oenothera biennis Linnaeus

Plate 145a

Stems stout, wandlike and simple or somewhat branched, 1 to 6 feet high from a biennial root. Stems and leaves somewhat hairy. Leaves lanceolate to ovate-lanceolate, sessile, 2 to 6 inches long, the lower ones with petioles, the upper ones much reduced in size; margins with low, distant teeth. Flowers in the axils of the reduced upper leaves (or bracts), bright yellow, 1 to 2 inches broad in terminal spikes, opening in the evening; calyx tube slender, two or three times longer than the ovary, its four slender lobes reflexed; petals four, broadly obovate; stamens eight, equal in length, the linear anthers on threadlike filaments. Fruiting capsules oblong, narrowed toward the apex, three-fourths to 1½ inches long and longer than the upper leaves (or bracts), one-eighth to one-fourth of an inch thick.

Dry or sandy soil in fields, waste ground and along roadsides, Labrador to Minnesota, south to Florida and Texas. Flowering from the latter part of June until autumn. Often appearing like a weed.

The Evening Primrose is a variable species and consists of several races or mutants which have been regarded as valid species. There are also two other closely related species in addition to the next one which is described. They are the Small-flowered Evening Primrose (O e n o t h e r a c r u c i a t a Nuttall), with linear-lanceolate calyx segments and linear petals, one-fourth to one-half of an inch long, found usually in sandy soil from Maine and Massachusetts to northern New York; and Oakes's Evening Primrose (O e n o t h e r a o a k e s i a n a Robbins), a dull-green plant covered with a soft, appressed pubescence, rather large flowers with linear-lanceolate calyx segments and obovate petals one-half to three-fourths of an inch long. Frequent in sandy soil in southern New England, Long Island and Eastern New York.

Northern Evening Primrose

Oenothera muricata Linnaeus

Plate 146

A slender plant resembling the common Evening Primrose but usually less branched and more slender-stemmed, 2 to 3 feet high, the stem puberulent and covered with scattered hairs which are enlarged at the base. Leaves lanceolate, mostly narrower than those of Oenothera biennis, slightly repand-denticulate or entire. Flowers light yellow, 1 to 2 inches broad; petals rhombic-obovate and blunt at the apex. Capsules hairy, narrowly oblong-cylindric, about 1 inch long, slightly curved and shorter than the persistent leaflike bracts which subtend them.

Sandy or gravelly soil, Newfoundland to southeastern New York and New Jersey. Flowering from July to September.

Common Sundrops

Kneiffia fruticosa (Linnaeus) Raimann

Plate 147a

Stems erect, 1 to 3 feet high and usually more or less branched, hairy or nearly smooth. Leaves lanceolate or broader, sometimes oval-lanceolate, usually pointed at the apex and narrowed at the sessile base, or the lower leaves petioled, the margins repand-denticulate or nearly entire, 1 to 4 inches long. Flowers bright yellow, diurnal, 1 to 2 inches broad, in terminal leafy-bracted clusters; calyx segments lanceolate, spreading, the tube mostly longer than the ovary; petals four, obcordate or slightly notched at the ends. Fruiting capsules sessile or short stalked, oblong and prominently winged, smooth or pubescent, one-fourth to one-third of an inch long; stamens eight, the alternate ones longer.

In dry or sandy soil, New Hampshire to Minnesota, south to Georgia and Louisiana. Flowering from June to August.

Among the closely related species in this State are Kneiffia longipedunculata Small, with club-shaped fruit pods on stalks longer than the body of the pod; leaves narrow but flowers conspicuous;

A. COMMON EVENING PRIMROSE
Oenothera biennis

B. SEEDBOX; RATTLEBOX
Ludwigia alternifolia

NORTHERN EVENING PRIMROSE

Oenothera muricata

A. COMMON SUNDROPS
Kneiffia fruticosa

B. SWEET PEPPER BUSH; WHITE ALDER
Clethra alnifolia

Kneiffia linearis (Michaux) Spach, with pedicels of the fruit shorter than the capsule; leaves very narrow, and Kneiffia pumila (Linnaeus) Spach, with small flowers one-half to 1 inch broad and almost sessile club-shaped fruit pods.

Biennial Gaura

Gaura biennis Linnaeus

Plate 148.

Stems slender, erect, 2 to 5 feet high, branched, especially above, and downy or softly hairy. Leaves alternate, sessile, narrow, pointed at both ends, remotely toothed on the margins, 2 to 4 inches long and one-sixth to one-half of an inch wide. Flowers white or whitish, turning pink with age, very numerous in spikes terminating the stems and branches; each flower somewhat less than one-half of an inch broad; calyx tube with four reflexed lobes; petals four, oblanceolate, somewhat unequal; stamens eight, declined, each slender filament with a small scale at the base; stigma four-lobed, surrounded by a cuplike border. Fruit nutlike, sessile, one-fourth to one-third of an inch long, narrowed at each end, four-ribbed and hairy.

In dry, sandy or waste soil, Quebec to Minnesota, south to Connecticut, Georgia and Arkansas. Flowering from July to September.

Ginseng Family

Araliaceae

Dwarf Ginseng or Groundnut

Panax trifolium Linnaeus

Plate 132b

A small, smooth herb, 3 to 6 inches high from a deep-seated, globose, perennial tuber, one-half of an inch or less in diameter and very pungent to the taste. Leaves three, at the summit of the slender stem on petioles one-half to 2 inches long; each leaf with three to five oval or oblanceolate, sessile, blunt leaflets, 1 to 2 inches long and one-fourth to two-thirds of an inch wide, finely toothed on the margins. Flowers white, fifteen to

twenty-five together in a solitary, stalked umbel; each flower about one-eighth of an inch broad or less. Petals five, spreading; stamens eight, alternate with the petals, styles usually three. Fruit a small, three-angled, yellow drupe about one-eighth of an inch broad (when the styles are only two-lobed, as is sometimes the case, the fruit is also two-lobed).

In woods and thickets, usually where the soil is moist, Nova Scotia to Wisconsin and Iowa, south to Georgia. Flowering in April and May or until early June.

The True Ginseng (P a n a x q u i n q u e f o l i u m Linnaeus) is much larger, 8 to 16 inches high, with a deep, simple compound or lobed tuberous root; leaflets 2 to 5 inches long, and the fruit, which is usually two-lobed, is bright crimson in color and nearly one-half of an inch broad.

Carrot Family

A m m i a c e a e

Hemlock Water Parsnip

Sium cicutaefolium Schrank

Plate 149

A perennial, smooth marsh herb with stout, erect, branching hollow stem, 2 to 6 feet high. Lower and basal leaves long petioled, finely divided; petioles sheathing the stem at their bases; segments of the leaves seven to seventeen in number, linear or lanceolate, 1½ to 5 inches long, one-eighth to 1 inch wide, long pointed at the apex, margins sharply toothed. Flowers white in large compound umbels, 2 to 3 inches broad; primary rays of the umbel eight to twenty in number, one-half to 1½ inches long; involucral bracts small and narrow; calyx teeth minute; petals inflexed at the apex. Fruit ovate, compressed, about one-eighth of an inch long, the ribs prominent.

In marshy places, Nova Scotia to British Columbia, south to Florida, Louisiana and California. Flowering from July to October.

BIENNIAL GAURA

Gaura biennis

HEMLOCK WATER PARSNIP
Sium cicutaefolium

Dogwood Family

Cornaceae

Low or Dwarf Cornel; Bunchberry

Cornus canadensis Linnaeus

Plate 150

Flowering and leaf-bearing stems 3 to 9 inches high, from slender, underground, horizontal, perennial rootstocks which are somewhat woody. Leaves five to nine in number, whorled at the summit of the upright stem, sessile, ovate or obovate, smooth or minutely hairy, pointed at each end, entire, 1 to 4 inches long; the stem sometimes with one or two pairs of smaller, opposite leaves below the whorl. Flowers greenish or yellowish, very small, several in a dense, globose cluster on a stalk one-half to 2 inches long which terminates the stem; the flowers proper surrounded by four to six, usually four, white, petallike, ovate, involucral bracts, one-third to three-fourths of an inch long, so that the entire inflorescence appears at first glance to be a single flower. Fruit a cluster of globose, bright-red berries.

In open woods, usually where the soil is moist, sometimes in thickets and on recently cleared land, Newfoundland to Alaska south to New Jersey, West Virginia, Indiana, Colorado and California and in eastern Asia. Flowering in May or June or later in the far north.

This dwarf member of a group made up chiefly of large shrubs and trees has been placed in a separate genus by some recent authors, the chief objection to which is its name, Chamaepericlymenum. This generic name has priority over the more appropriate generic name, Cornella, given it by Doctor Rydberg.

The Flowering Dogwood (Cynoxylon floridum (Linnaeus) Rafinesque) is a small tree or large shrub. The involucral bracts are white or pinkish, obovate and notched at the apex, 1 to 2½ inches long. Common in the eastern and southern portions of the State.

White Alder Family

Clethraceae

Sweet Pepper Bush; White Alder

Clethra alnifolia Linnaeus

Plate 147b

A much-branched shrub, 3 to 9 feet high with finely canescent twigs. Leaves obovate, blunt or pointed at the apex, narrowed or tapering at the base, sharply toothed, smooth or nearly so and green on both sides, 1 to 3 inches long, on very short petioles. Flowers white, about one-third of an inch broad, in elongated, slender racemes terminal on the branches, spicy-fragrant; calyx five-cleft, the segments oblong, blunt, nerved; petals five, very slightly united at the base, obovate; stamens ten; anthers sagittate, inverted in anthesis, the pollen sacs opening by apical pores; ovary three-celled, style longer than the stamens, with three stigmas. Fruit pods almost globose, about one-eighth of an inch long.

In marshy or swampy ground or low, sandy fields and wet woods near the coast from Maine to Florida and Mississippi. Flowering in July and August.

Wintergreen Family

Pyrolaceae

Bog Wintergreen

Pyrola uliginosa Torrey

Plate 151a

Leaves all basal, the blades orbicular or broadly oval, dull green, thick in texture, somewhat evergreen, blunt or rounded at the apex, 1 to 2 inches long, the margins very obscurely crenulate, petioles about as long or longer than the blades. Flowers pink or purplish pink, one-half to two-thirds of an inch broad; calyx lobes ovate-oblong, one-third as long as the blunt petals; stamens ten, anthers opening by a basal but apparently apical pore as the anther becomes reversed at flowering time, which is true of all species of Pyrola. Fruit capsules about one-fifth of an inch in diameter.

LOW OR DWARF CORNEL; BUNCHBERRY
Cornus canadensis

In bogs and swamps, Newfoundland to Alaska, south to Vermont, central New York, Michigan, Colorado and California. Considered by some botanists as identical with Pyrola incarnata Fischer, of northern Asia. Flowering in June and July. Rather abundant in open sphagnum bogs of Herkimer, Oneida, Oswego, Madison and Onondaga counties, also in Bergen swamp, Genesee county, and doubtless in other similar bogs throughout western and northern New York.

Shinleaf

Pyrola elliptica Nuttall

Plate 151b

Leaves broadly oval or elliptical, not evergreen, rather thin and dark green, blunt, rounded or narrowed at the base, the margins wavy or plicate-crenulate with very low teeth; 1½ to 4 inches long, usually longer than the petioles, all basal. Flowers whitish, nodding, one-half to two-thirds of an inch broad, fragrant, racemose on scapes or stalks, 5 to 10 inches high; calyx lobes five, ovate-triangular, sharp pointed; petals five, blunt, flat, about four times as long as the calyx lobes; stamens ten, declined, style also declined, its apex curved upward. Fruit capsule five-lobed, five-celled, the valves cobwebby on the margins when splitting open, about one-fourth of an inch in diameter.

In rich soil of rather dry woods and clearings, Nova Scotia to British Columbia, south to Maryland, Illinois, Iowa and in the Rocky mountains to New Mexico. Our commonest species of Pyrola. Flowering from the latter part of June to August.

Round-leaved American Wintergreen

Pyrola americana Sweet

Figure XX

Flowering scape 6 to 20 inches high with five to twenty flowers in a terminal raceme, the flowers in the axils of small bracts. Leaves basal, orbicular or oval, spreading, blunt, thick in texture, evergreen and shining above, the margins crenulate, narrowed, rounded or slightly heart-shaped

Figure XX
Round-leaved American Wintergreen
(Pyrola americana Sweet)

at the base, 1 to 4 inches long with petioles mainly shorter than the blades. Flowers white, or faintly tinged with pink, nodding and fragrant, one-half to two-thirds of an inch broad on pedicels one-fourth of an inch long or less. Calyx lobes oblong or lanceolate; petals about three times as long as the calyx lobes, thick and blunt; stamens and style declined, the style projecting conspicuously from the flower. Fruit a small capsule about one-fourth of an inch in diameter.

In dry woods, usually in sandy soil, Nova Scotia to South Dakota south to Georgia and Ohio. Flowering in June and July. The most showy of our native species of Wintergreen or Shinleaf, as they are sometimes called.

There are three additional species of Shinleaf or Wintergreen in New York. The Greenish-flowered Wintergreen (Pyrola chlorantha Swartz), has small, orbicular, thick-textured leaf blades, one-half to 1½ inches

A. BOG WINTERGREEN
Pyrola uliginosa

B. SHINLEAF
Pyrola elliptica

long, and greenish white flowers about one-half of an inch broad. Frequent in dry woods.

The Liver-leaf Wintergreen (Pyrola asarifolia Michaux) has reniform leaf blades usually wider than long, and a raceme of nodding, purple or rose-colored flowers which are one-half to two-thirds of an inch broad. A boreal species, of cold, moist woods and swamps of the north, known in New York only from a few Adirondack localities.

The One-sided Wintergreen (Pyrola secunda Linnaeus) has short, slender stems, not stiffly erect but ascending, 2 to 10 inches high, leaves oval, ovate or nearly orbicular in shape, pointed at the apex with crenulate-serrate margins; flowers usually many in a one-sided terminal raceme, white or greenish white and soon drooping, one-fourth to one-third of an inch broad.

The One-flowered Wintergreen (Moneses uniflora (Linnaeus) A. Gray) is closely related to the Pyrolas and has a single flower, one-half to two-thirds of an inch broad on a stem 2 to 6 inches high. In general appearance and character of leaves it resembles most closely the small Pyrola secunda.

Pipsissewa; Prince's Pine

Chimaphila umbellata (Linnaeus) Barton

Plate 152a

Stems trailing, creeping, branching and more or less horizontally subterranean and perennial, slightly woody in texture, sending up both leafy and flowering branches which are erect and 5 to 12 inches high. Leaves narrowly wedge-shaped, blunt or pointed at the apex, tapering at the base, sharply toothed, bright green and shining, 1 to $2\frac{1}{2}$ inches long, one-fourth to 1 inch wide above the middle and remaining green over winter. Flowers one-half to two-thirds of an inch broad, several in an umbellate or subcorymbose cluster, white or pinkish, usually with a deep-pink ring; petals five, concave, nearly orbicular; stamens ten; style very stout, obconic; stigma large, orbicular, with five crenations or lobes. Capsules erect, globular, five-lobed and five-celled; the valves not woolly on the margins when separating, one-fourth to one-third of an inch thick.

In dry woods, often under or near pines, Nova Scotia to British Columbia, south to Georgia and the Rocky mountains. Flowering in this State from the latter part of June until August.

The Spotted Wintergreen (C h i m a p h i l a m a c u l a t a (Linnaeus) Pursh) has lanceolate leaves, broadest at or below the middle, mottled with white along the veins, and somewhat larger, white flowers.

Indian Pipe Family

M o n o t r o p a c e a e

Indian Pipe; or Corpse Plant

Monotropa uniflora Linnaeus

Plate 152b and Figure XXI

A white, scapose, succulent plant growing usually in clusters from a mass of matted, brittle roots, attached to partially decayed organic matter in the soil; stems 4 to 10 inches high, erect, each with a solitary nodding, terminal, inodorous, oblong-campanulate flower, one-half to 1 inch long; the fruit, which is a five-celled, many-seeded capsule becoming erect; sepals two to four, deciduous; petals four to five (rarely six), puberulent within, white or slightly pinkish, somewhat longer than the stamens, which are usually ten in number; ovary ovoid, pointed, narrowed into the short, thick style and funnelform stigma.

In moist, rich woods, Anticosti to Florida west to Washington and California. Flowering from June to August.

The Indian Pipe, or Corpse Plant, as it is frequently known, is one of the few flowering plants which possess a saprophytic habit, and is in consequence devoid of green leaves or green color in the stems. The flowers are said to be inodorous but I have usually noticed a peculiar faint odor to fresh flowers. The species of Pinesap (Hypopitys) and most of the members of the Broom Rape family also have the same habit, although many of them are pink, yellow or brown in color.

A. PIPSISSEWA; PRINCE'S PINE
Chimaphila umbellata

B. INDIAN PIPE; CORPSE PLANT
Monotropa uniflora

Photograph by George W. Kellogg

Figure XXI

Indian Pipe (Monotropa uniflora Linnaeus); one-half natural size

Pinesap; False Beechdrops

Hypopitys americana (DeCandolle) Small

Plate 153a

Entire plant lemon-yellow or faintly pink in color, hairy, 3 to 10 inches tall from a dense mass of fleshy root-fibers. Stems scaly, the scales crowded on the lower part of the stems, one-eighth to one-half of an inch long, the upper ones sometimes toothed. Flowers nodding in a one-sided raceme which becomes erect. Terminal flowers usually five-parted, the lateral ones three or four-parted; petals three-fourths to 1 inch long, slightly pubescent and ciliate like the sepals; stigma not retrorsely bearded, the style sparingly pubescent. Fruit capsules oval, one-fourth to 1 inch long.

In open or sandy woods, Ontario and New York, south to North Carolina. Flowering from July until September.

The Hairy Pinesap (Hypopitys lanuginosa (Michaux) Nuttall) is usually tawny or crimson and more conspicuously hairy than the species described above; the stigma retrorsely bearded, the sepals and petals long ciliated. By some botanists the two are regarded as forms of the same species.

Heath Family

Ericaceae

Purple or Pink Azalea; Pinkster Flower

Azalea nudiflora Linnaeus

Plate 154

A much-branched shrub, 2 to 8 feet high, the twigs smooth or with some stiff hairs. Leaves thin, alternate, mostly clustered near the ends of the twigs, obovate or oblong, pointed at both ends, hairy on the principal veins and midrib beneath, usually smooth above; when young and just unfolding they are usually distinctly canescent, at least beneath. Flowers pink or nearly white, usually opening before the leaves are fully expanded or in shaded situations opening with the leaves, fragrant, 1½ to 2 inches broad, somewhat two-lipped, the tube of the flower hairy on the outside,

A. PINESAP; FALSE BEECHDROPS
Hypopitys americana

B. TRAILING ARBUTUS; MAYFLOWER
Epigaea repens

PURPLE OR PINK AZALEA; PINKSTER FLOWER

Azalea nudiflora

the five stamens projecting beyond the flower. Fruit a slender, oblong, erect, hairy capsule, two-thirds to three-fourths of an inch long.

In sandy or rocky woods and thickets, sometimes (especially in the north) in or around the borders of bogs and swamps, Massachusetts to Illinois, south to Florida and Texas. Flowering in May or early June. Often called Wild or Swamp Honeysuckle.

Mountain or Hoary Azalea

Azalea canescens Michaux

Figure XXII.

A branching shrub, 3 to 10 feet high with oval, elliptic or obovate leaves, wider and shorter than those of the Pinkster, conspicuously soft-hairy beneath, rarely nearly smooth. Flowers rose color to white, very fragrant, on glandular pedicels, expanding with or earlier than the leaves; corolla 1½ to 2 inches broad, the tube of the corolla densely glandular on the outside but scarcely viscid; stamens projecting somewhat from the flower.

In woods, New Hampshire and eastern and southern New York south to Florida and Louisiana. Flowering in May.

The White Azalea (A z a l e a v i s c o s a Linnaeus) is usually a lower shrub, 1 to 6 feet high, with small oblanceolate leaves which are smooth or with a few scattered hairs above and on the veins beneath, often whitish beneath; flowers white or rarely pink, very fragrant, appearing after the leaves unfold; the tube of the corolla very sticky and glandular. Frequent in swamps from Maine to Ohio, Arkansas and Florida. In New York rare or infrequent north of the Atlantic coastal region.

The Flame or Yellow Azalea (A z a l e a l u t e a Linnaeus) with very showy, orange-yellow or red flowers, is found in the lower Hudson valley, and from the Catskill region southward along the mountains.

Great Laurel; Rose Bay

Rhododendron maximum Linnaeus

Figure XXIII

A large shrub, in the south sometimes almost treelike. Leaves evergreen, thick, oblong, oblong-lanceolate or oblanceolate, dark green on both

Figure XXII
Mountain or Hoary Azalea
(Azalea canescens Michaux)

sides, sharply pointed at the apex, usually narrowed toward the base, 4 to 8 inches long, 1 to 2½ inches wide, drooping in winter. Flowers large, several or many from a scaly conelike bud forming a dense inflorescence or cluster. Pedicels sticky-pubescent; corolla 1½ to 2 inches broad, about 1 inch long, rather deeply five-cleft into oval obtuse lobes, rose color varying to white, with yellowish or orange spots within. Fruit a small capsule about two-thirds of an inch long.

In low woods and along streams, Nova Scotia, Quebec, Ontario and Ohio to Georgia and Alabama. In New York State rather local in distribution.

The Lapland Rose Bay (Rhododendron lapponicum Linnaeus) is a low, depressed or prostrate shrub less than 1 foot high, with small purple flowers about three-fourths of an inch broad. It is found only on the highest summits of the Adirondack mountains, and in alpine and subarctic regions of both hemispheres.

The Rhodora (Rhodora canadensis Linnaeus) is closely allied to the Rhododendrons. It is a small shrub, 1 to 5 feet high. The flowers appear with or before the leaves, rose-purple in color; the corolla about an inch broad, the lower lip of the corolla divided into two linear-oblong, obtuse segments. In bogs and on wet slopes, Newfoundland to New Jersey, west to Quebec, central New York and Pennsylvania.

Labrador Tea

Ledum groenlandicum Oeder

Plate 155a

A small, much-branched shrub, a few inches to 4 feet high with densely tomentose twigs. Leaves oblong, blunt, sessile, thick and evergreen, somewhat fragrant when crushed, 1 to 2 inches long, one-fourth to two-thirds of an inch wide, strongly revolute on the margins, green above, densely brown-tomentose beneath. Flowers white, one-third to one-half of an inch broad, numerous in terminal clusters, each flower on a pedicel or stalk an inch long or less, which becomes strongly recurved in fruit; calyx small, five-toothed; petals five, separate, obovate; stamens five to seven; fruit capsule oblong, one-fourth of an inch long, five-valved, opening from the base upward.

Figure XXIII
Great Laurel or Rose Bay
(Rhododendron maximum Linnaeus)

A. LABRADOR TEA
Ledum groenlandicum

B. STAGGERBUSH
Neopieris mariana

In swamps, bogs and mountain summits, Greenland and Labrador to British Columbia, south to New England, Pennsylvania, Wisconsin and Washington. Flowering from June to August.

Sheep Laurel; Lambkill; Wicky

Kalmia angustifolia Linnaeus

Plate 160a

A small shrub, 6 to 24 inches high, sometimes taller, simple or with a few nearly erect branches. Leaves opposite or in threes, oblong or oblong-lanceolate, blunt or pointed at the apex, petioles short, blades dark green above, pale green beneath, persistent or evergreen into the second year, the new leaves light green, 1 to $2\frac{1}{2}$ inches long, one-fourth to three-fourths of an inch wide. Flowers one-fourth to one-half of an inch broad on slender pedicels, purplish or crimson, numerous in dense, lateral clusters; calyx five-parted, the segments ovate, pointed, glandular-canescent; corolla saucer-shaped, the limb strongly ten-keeled in bud, the margin five-lobed, with ten pouches close to the margin; stamens ten, shorter than the corolla, the anther sacs opening by large terminal pores, the anthers held in the pouches of the corolla limb as it expands and finally straightening out elastically when the corolla is fully expanded. Fruit capsule globular, indented at the summit, five-lobed, canescent, one-eighth to one-sixth of an inch in diameter, on recurved stalks, the style long and persistent on the capsule in fruit.

In sandy, moist soil, hillsides and swamps, Newfoundland to Hudson bay, south to Georgia and Michigan. Flowering in June and July.

Mountain Laurel; Calico Bush

Kalmia latifolia Linnaeus

Plate 156a

A much-branched shrub with stiff branches, 3 to 15 feet high, often forming dense thickets. In the south it sometimes attains the size of a small tree. Leaves smooth, oval or elliptic to ovate-lanceolate, pointed at both ends, on short petioles, green on both sides, usually paler beneath, thick

and evergreen, 2 to 5 inches long, one-half to 1½ inches wide. Flowers three-fourths to 1 inch broad, pink or white, numerous and showy in terminal clusters; pedicels of the flowers densely sticky-glandular and two-bracteolate at the base, slender, one-half to 1½ inches long; both the calyx and the corolla sticky-glandular without, the corolla similar in structure to that of Kalmia angustifolia, which is typical of all members of the genus Kalmia. Fruit capsule globular and indented at the top, five-lobed, one-sixth to one-fourth of an inch thick.

In rocky and sandy woods, thickets and recently cleared land, New Brunswick to Ontario and Indiana, south to Florida, Kentucky and Louisiana. Flowering in May and June. Known also as Spoonwood, Broad-leaved Ivy and Clamoun.

Pale or Swamp Laurel

Kalmia polifolia Wangenheim

Plate 156b

A small shrub, 6 inches to 2½ feet high with erect or ascending branches and two-edged twigs. Leaves opposite, rarely in threes, nearly sessile, oblong or linear-oblong, blunt at the apex, green above, glaucous-white below, one-half to 2 inches long, one-sixth to one-half of an inch broad, with revolute margins. Flowers few or several, purple, one-half to three-fourths of an inch broad, in simple, terminal umbels on slender stalks one-half to 1½ inches long which are erect in fruit. Segments of the calyx with rough margins. Corolla structure like that of Kalmia angustifolia. Fruit capsules about one-fourth of an inch long or less.

In bogs from Newfoundland to Hudson bay and Alaska, south to New England, Pennsylvania, Michigan, Montana and California. Flowering in June and July.

Leatherleaf; Dwarf Cassandra

Chamaedaphne calyculata (Linnaeus) Moench

Plate 157a

A small, erect shrub with numerous branches, 1 to 4 feet high. Leaves alternate, leathery but rather thin, evergreen, very short petioled, blunt

A. MOUNTAIN LAUREL; CALICO BUSH
Kalmia latifolia

B. PALE OR SWAMP LAUREL
Kalmia polifolia

A. LEATHERLEAF; DWARF CASSANDRA
Chamaedaphne calyculata

B. DWARF HUCKLEBERRY; GOPHERBERRY
Gaylussacia dumosa

or pointed, oblanceolate or oblong in shape, covered on both sides and more densely so beneath with small, round, scurfy scales, especially when young, one-half to 1½ inches long, the margins slightly toothed, the upper leaves reduced to bracts which subtend the flowers. Old leaves often bronzed or brownish in contrast to the bright green of the new leaves. Flowers white, fragrant, solitary in the axils of the upper small leaves, forming a terminal, leafy, one-sided raceme; corolla oblong-cylindric, about one-fourth of an inch long, narrowed at the throat, the margin with five recurved teeth. Stamens ten, not projecting from the flower. Fruit a globular capsule, about one-eighth of an inch in diameter.

In swamps, bogs and wet places, Newfoundland to Alaska, south to Georgia, Illinois, Michigan and British Columbia. Flowering in May and June.

Wild Rosemary; Marsh Holy Rose; Moorwort

Andromeda polifolia Linnaeus

Plate 150a

A small bog shrub, 1 to 3 feet high, simple or with a few branches. Leaves linear to oblong-lanceolate, pointed or blunt at the apex, narrowed at the base, the margins strongly revolute, dark green above, whitish beneath, 1 to 2½ inches long, one-sixth to one-third of an inch wide, on very short petioles. Flowers white, drooping, few or several in terminal umbels, the pedicels or flower stalks one-third to one-half of an inch long. Corolla almost globular, one-sixth to one-fourth of an inch in diameter, much constricted at the throat, with five small, recurved teeth, the ten stamens not projecting from the flower. Fruit capsules about one-sixth of an inch in diameter.

In sphagnum bogs, Labrador to Alaska, south to New Jersey, Pennsylvania, Michigan and British Columbia. Also in northern Europe and Asia. Flowering in May and June.

Staggerbush

Neopieris mariana (Linnaeus) Britton

Plate 155b

A small, smooth shrub with erect or nearly erect, wandlike branches, 1 to 4 feet high. Leaves oval to oblong, smooth above, slightly hairy on the veins and also black-dotted beneath, pointed at the apex and base, the margins entire, $1\frac{1}{2}$ to 3 inches long, rather thin, somewhat persistent over winter, but scarcely evergreen. Flowers white or pink, showy, about one-half of an inch long, cylindric, nodding, few or several in lateral umbels or clusters on the almost leafless branches of the preceding season; segments of the calyx large and long pointed, almost leaflike. Fruit an ovoid-pyramidal capsule, one-eighth or one-sixth of an inch long.

In sandy fields, thickets and clearings, near the coast from Rhode Island to Florida and west to Tennessee and Arkansas. Flowering in May and June.

Trailing Arbutus; Mayflower

Epigaea repens Linnaeus

Plate 153b

A prostrate, perennial, slightly woody plant, more or less hairy, especially on the new stems and leaves, extensively spreading on the ground and often forming patches of considerable size. Leaves oval or suborbicular, thick, coriaceous, evergreen, blunt or pointed at the apex, rounded or heart-shaped at the base, 1 to 4 inches long, one-half to 2 inches wide, smooth above when mature; petioles short and hairy. Flowers few or several in dense clusters at the ends of the branches, often more or less concealed by the leaves, very fragrant, pink or white, one-half to two-thirds of an inch long. Corolla with a tube expanding at the summit into a five-lobed margin or limb, nearly as broad as the length of the flower and very hairy within. Fruit a fleshy, hairy, slightly five-lobed, almost globular capsule about one-fourth to one-third of an inch in diameter,

splitting at maturity along the partitions into five valves which spread backward into a five-parted rosette, exposing the fleshy interior.

In woods, preferring sandy or rocky soil, often under or near evergreens, Newfoundland to Saskatchewan, south to Florida and Wisconsin. Flowering in April and May.

Among our wild flowers, the Trailing Arbutus, often called Mayflower, is perhaps the greatest favorite and because of its prostrate habit and short stems, impossible to pick without uprooting some of the plant. It is also very sensitive to fire and sudden changes in the character of its surroundings, such as lumbering and grazing, so that in many localities where it was once common it is now rare or entirely exterminated.

Creeping or Spicy Wintergreen; Checkerberry

Gaultheria procumbens Linnaeus

Plate 158b

A low, aromatic, semiwoody plant with creeping or subterranean, perennial stems, branches erect or nearly so, 2 to 6 inches high, bearing several oval, oblong or obovate, blunt or pointed, thick, evergreen leaves, dark green and shining above, pale beneath, 1 to 2 inches long, margins slightly revolute and serrate with low bristle-tipped teeth. Flowers white or slightly pink, usually solitary in the axils of the leaves, on recurved stalks. Corolla urn-shaped, with five recurved teeth. Stamens ten, included within the flower, the anther sacs opening by a terminal pore. Fruit a nearly globular berry usually somewhat indented at the summit and slightly five-lobed, bright red when mature, one-third to one-half of an inch in diameter, mealy and very spicy in flavor, ripe in late autumn and persisting on the branches well into the next season.

In woods and open places, especially under or near evergreen trees, and most abundant in sandy regions, Newfoundland to Manitoba, New Jersey, Georgia, West Virginia, Indiana and Michigan.

The generic name was given to this plant by Peter Kalm in honor of Doctor Gaultier who lived at Quebec in the middle of the eighteenth century.

Huckleberry Family

Vacciniaceae

Dwarf Huckleberry; Gopherberry

Gaylussacia dumosa (Andrews) Torrey & Gray

Plate 157b

A low, branching shrub, 1 to 2 feet high from a horizontal or spreading base and woody rootstock, the branches erect or nearly so, usually leafless below, the young parts glandular and pubescent. Leaves oblanceolate or oblong-obovate, blunt, entire, firm, green on both sides, shining when mature, sparingly hairy or smooth, resinous or glandular, 1 to 1½ inches long, sessile or nearly so. Flowers white, pink or nearly red, in rather long and loose racemes with numerous oval, leaflike bracts; corolla bell-shaped, slightly less than one-fourth of an inch long, the margin five-lobed; filaments pubescent. Fruit a black berry, without bloom, one-fourth to one-third of an inch in diameter and rather tasteless.

In sandy or rocky soil, often in swampy depressions, Newfoundland to Florida and Louisiana, near the coast. Flowering in May and June.

Large or American Cranberry

Oxycoccus macrocarpus (Aiton) Pursh

Plate 158a

A trailing bog plant with perennial, somewhat woody, slender, creeping stems, rooting at the nodes, the branches 5 to 10 inches long, and ascending, forming dense mats or thickly interwoven with moss and other vegetation of the bog. Leaves alternate, very short petioled, thick, evergreen, oval, oblong or slightly obovate, blunt at both ends, entire, one-fourth to two-thirds of an inch long, one-third of an inch wide or less, pale or glaucous beneath and slightly revolute on the margins. Flowers pink, one-third to one-half of an inch broad, nodding on erect stalks, usually somewhat racemosely clustered. Stamens eight or ten, the filaments distinct, the anthers united into a long-pointed cone, prolonged upward when

A. LARGE OR AMERICAN CRANBERRY
Oxycoccus macrocarpus

B. CREEPING OR SPICY WINTERGREEN; CHECKERBERRY
Gaultheria procumbens

the flower is opened, and conspicuous as the petals are recurved; anthers opening by a pore at the apex. Fruit a globose or oblong, juicy, red berry, many-seeded and acidulous, one-third to three-fourths of an inch long.

In bogs or boggy meadows, Newfoundland to Ontario, south to Virginia and Arkansas. Flowering in June and July. Fruit ripe in September and October. Extensively cultivated in New England and New Jersey for its fruit.

The Small Cranberry (Oxycoccus oxycoccus (Linnaeus) MacMillan) has smaller, thicker, ovate leaves and pink flowers about one-third of an inch broad; the fruit is about one-third of an inch in diameter or less and often spotted when young. It is found in cold bogs, especially northward.

The Creeping Snowberry (Chiogenes hispidula (Linnaeus) Torrey & Gray) resembles somewhat the Small Cranberry and grows in similar situations. It is somewhat hairy, and the small oval or ovate leaves one-sixth to one-third of an inch long are smooth above but sprinkled beneath with numerous, appressed, stiff, brownish hairs; flowers few, nodding, about one-sixth of an inch long, white; fruit a small, snow-white berry.

Primrose Family

Primulaceae

Mistassini or Dwarf Canadian Primrose

Primula mistassinica Michaux

Plate 159b

A small, perennial, scapose herb, 1 to 6 inches high. Leaves all basal, spatulate to rhombic-ovate or obovate in shape, green on both sides, somewhat toothed, blunt at the apex, tapering at the base, sessile or with short petioles, one-half to 1½ inches long, one-eighth to one-half of an inch wide. Flowers two to eight, forming a loose cluster at the summit of the scape. Corolla pink or pale purple, with or without a yellow eye, funnelform, the tube longer than the five-lobed calyx, the lobes of the corolla obcordate, one-eighth to one-fifth of an inch long; stamens five, fastened to the inside of the corolla tube. Fruit a small, erect, narrowly oblong capsule, one-fifth to one-third of an inch long.

On wet banks and rocks, Maine to Newfoundland, Michigan and Saskatchewan. In New York known only in a few localities in the northern and western parts of the State, cliffs along Fish creek, north of Taberg, Oneida county; Cayuga lake; Fall creek, Ithaca; Portage and Niagara Falls.

Crosswort; Whorled Loosestrife

Lysimachia quadrifolia Linnaeus

Plate 160b

Stems usually simple, slender, erect, 1 to 2½ feet high, more or less pubescent. Leaves whorled, usually in fours or fives, sometimes the lower ones opposite, sessile or nearly so, lanceolate to ovate, pointed at the apex, 1 to 4 inches long, one-fourth to 1 inch wide, usually black-dotted, the upper ones usually reduced to a small size. Flowers yellow, one-fourth to one-half of an inch broad, axillary, usually one in the axis of each of the four or five leaves at each node, on slender stalks, one-half to 1½ inches long. Corolla rotate, streaked with dark lines or spotted; sepals narrow and long pointed. Fruit a small capsule about as long as the calyx.

In moist soil, thickets and marshes, New Brunswick to Minnesota, south to Georgia, Tennessee and Wisconsin. Flowering from June to August.

Bulb-bearing Loosestrife; Swamp Candles

Lysimachia terrestris (Linnaeus) Britton, Sterns & Poggenberg

Plate 161b

Stem simple or sparingly branched, erect, smooth, 8 to 20 inches high. Leaves usually opposite, lanceolate or oblong-lanceolate, sharp pointed at both ends, nearly sessile and usually dotted with black, 1 to 3 inches long, one-sixth to two-thirds of an inch wide; often bearing, after flowering time, long bulblets (suppressed branches) in the axils, especially in the autumn. It was this condition that was mistaken by Linnaeus for a Mistletoe, under which group he originally classified it. Flowers one-fourth to one-third of an inch broad, chiefly in the axils of the upper and smaller leaves and forming a terminal leafy raceme; stalks of the flowers slender, one-half to three-

A. WILD ROSEMARY; MARSH HOLY ROSE; MOORWORT
Andromeda polifolia

B. MISTASSINI OR DWARF CANADIAN PRIMROSE
Primula mistassinica

A. SHEEP LAUREL; LAMBKILL; WICKY
Kalmia angustifolia

B. CROSSWORT; WHORLED LOOSESTRIFE
Lysimachia quadrifolia

A. BLUEWEED; VIPER'S BUGLOSS
Echium vulgare

B. BULB-BEARING LOOSESTRIFE; SWAMP CANDLES
Lysimachia terrestris

fourths of an inch long; sepals long-ovate, pointed; corolla rotate, parted nearly to the base, usually into five segments, yellow with purple streaks or dots. Fruit a capsule about one-eighth of an inch in diameter.

In marshes, swamps and moist thickets, Newfoundland to Manitoba, south to Georgia and Arkansas. Flowering from July to September.

Moneywort; Creeping Loosestrife

Lysimachia nummularia Linnaeus

Plate 164a

Stems creeping and usually rooting at the nodes, 1 to 2 feet long or longer, smooth. Leaves opposite, broadly oval or orbicular, one-half to 1½ inches long, with short petioles. Flowers two-thirds to 1 inch broad, solitary in the axils of the leaves, bright yellow; sepals pointed, half as long as the five blunt lobes of the dark-dotted corolla.

Native of Europe and naturalized in moist grassy places throughout the eastern states. Flowering from June to August.

Fringed Loosestrife

Steironema ciliatum (Linnaeus) Rafinesque

Plate 162

Stems simple or sparingly branched, erect, smooth, 1 to 3½ feet high. Leaves opposite, thin, ovate to ovate-lanceolate, sharp pointed at the apex, blunt to slightly heart-shaped at the base, 2 to 6 inches long, one-half to 3 inches wide, the margins and short petioles hairy. Flowers one-half to 1 inch broad, on slender stalks in the upper axils; lobes of the calyx lanceolate and sharp pointed, shorter than the five yellow segments of the corolla, which are finely toothed toward their tips; stamens five. Fruit a five-valved capsule, slightly longer than the calyx.

In moist thickets and open woods, Nova Scotia to British Columbia, south to Georgia, Kansas and Arizona. Flowering from June to August.

Tufted Loosestrife

Naumburgia thrysiflora (Linnaeus) Duby

Plate 163

Stems mainly simple, often several together from a slender, perennial rootstock, 1 to 2½ feet high, smooth or slightly pubescent. Leaves opposite, lanceolate or oblong-lanceolate, pointed at the apex, narrowed at the base, sessile, 2 to 5 inches long, one-third to 1 inch wide, the lower leaves reduced to ovate scales. Flowers yellow, spotted with black, one-sixth to one-fourth of an inch broad, in dense, spikelike, oblong or ovoid racemes on stout axillary stalks which are one-half to 1½ inches long; sepals five to seven-divided and spotted, the segments narrow; corolla deeply five to seven-parted with rather narrow segments. Fruit a globose capsule which, when mature, is about as long as the sepals or slightly longer.

In swamps, low woods and wet meadows, Nova Scotia to Alaska, south to Pennsylvania, Missouri, Montana and California. Flowering from the latter part of May to July. The same species is also found in Europe and Asia.

Star Flower; Chickweed Wintergreen

Trientalis borealis Rafinesque

(*T. americana* Pursh)

Plate 165b

Stems (rootstocks) buried, creeping and horizontal, several inches long, sending up simple branches, 3 to 9 inches high, each of which bears a whorl of five to ten leaves at the summit, and a few scalelike leaves on the lower part of the stem. Leaves thin, lanceolate or oblong-lanceolate, sharp pointed at both ends, sessile or nearly so, 1½ to 5 inches long, one-third to 1¼ inches wide, the margins minutely crenulate. Flowers one-third to one-half of an inch broad, white, one to three or four, on very slender peduncles at the summit of the leaf-bearing stems; sepals very narrow and spreading, usually seven in number; corolla with five to nine (usually seven) oblong or somewhat obovate, pointed segments. Fruit a small, globular capsule shorter than the sepals.

FRINGED LOOSESTRIFE
Steironema ciliatum

TUFTED LOOSESTRIFE
Naumburgia thyrsiflora

In moist woodlands and thickets, Labrador to Manitoba, south to Virginia, Illinois and Michigan. Flowering in May and June.

On Mount McIntyre, and on other high mountains of the Adirondacks, occurs a form with leaves elliptical-ovate to ovate-lanceolate in shape, rather thick in texture and only 1 to 2 inches long. In Bergen swamp, Genesee county, occurs a form with linear-lanceolate leaves, 1 to 3 inches long.

Plumbago Family

Plumbaginaceae

Seaside Lavender; Marsh Rosemary; Canker-root

Limonium carolinianum (Walter) Britton

Plate 166b

A rather fleshy, smooth plant of salt meadows near the coast, with a thick tapering or branched, astringent root. Flower-bearing scapes slender, much branched above, 6 to 18 inches high. Leaves all at the base of the plant, oblanceolate in shape, blunt at the apex, narrowed below into margined petioles, the margins of the leaf blades entire or slightly undulate, 2 to 10 inches long, one-half to 1½ inches wide. Flowers pale purple, erect, in many one-sided clusters forming a large, paniculate, terminal inflorescence, each flower about one-sixth of an inch high; calyx five-toothed, the calyx tube with ten faint ribs below and closely subtended by the small bracts; petals five, spatulate in shape.

On salt meadows, Labrador to Florida and Texas. Also in Bermuda. Flowering from July to October.

Gentian Family

Gentianaceae

Sea or Marsh Pink

Sabbatia stellaris Pursh

Plate 166a

A small, herbaceous plant with stems slightly four-angled below, 5 to 20 inches high and with numerous alternate branches toward the

summit. Leaves oblong-lanceolate to linear, opposite, sessile, blunt at the apex, the lower leaves usually smaller and obovate, the upper ones narrower and smaller. Flowers numerous, three-fourths to 1½ inches broad, each flower at the apex of a branch or slender stalk. Calyx without distinct ribs, its lobes, usually five in number, narrowly linear, usually somewhat shorter than the five oblong or obovate corolla segments. Corolla pink with a yellowish, starry eye, bordered with red, rarely the entire corolla white; style two-cleft to below the middle. Fruit a small capsule about one-fourth of an inch high.

In and around salt meadows near the coast, from Massachusetts to Florida. Flowering from the latter part of July until September.

The Slender Marsh Pink (Sabbatia campanulata (Linnaeus) Torrey) with calyx lobes as long or longer than the corolla, and with narrower leaves, is also found in salt meadows along the coast.

The Large Marsh Pink (Sabbatia dodecandra (Linnaeus) Britton, Sterns & Poggenberg), (figure XXIV) has eight to twelve corolla segments, and is occasionally found in the salt marshes along the coast, but more rarely than the other two species.

The Common Rose Pink or Bitterbloom (Sabbatia angularis (Linnaeus) Pursh), with square stems, opposite branches, and ovate, clasping leaves, is usually found in thickets and damp, grassy places in southern, central and western New York and southward.

Fringed Gentian

Gentiana crinita Linnaeus

Plate 167

Stems somewhat angled, leafy and often with numerous opposite branches above, 1 to 3 feet high from a fibrous root which is usually biennial. Leaves obovate and blunt below, the upper leaves 1 to 2 inches long, sessile and rounded at the base, pointed at the apex. Flowers several or numerous, each at the end of a branch or stalk, each flower about 2 inches high. Calyx lobes lanceolate, pointed, unequal, their midribs decurrent on the angles of the calyx tube. Corolla four-parted, bright blue, rarely white, narrowly bell-shaped, the lobes obovate, rounded and conspicuously fringed at the ends, spreading when mature but apparently closing at night.

A. MONEYWORT; CREEPING LOOSESTRIFE
Lysimachia nummularia

B. UPRIGHT OR LOW BINDWEED
Convolvulus spithamaeus

A. NARROW-LEAVED COWWHEAT
Melampyrum lineare

B. STAR FLOWER; CHICKWEED WINTERGREEN
Trientalis borealis

A. SEA OR MARSH PINK
Sabbatia stellaris

B. SEASIDE LAVENDER; MARSH ROSEMARY; CANKER-ROOT
Limonium carolinianum

Figure XXIV

Large Marsh Pink

(Sabbatia dodecandra (Linnaeus) Britton, Sterns and Poggenberg)

Stamens four, attached to the inner base of the corolla and not projecting out of the flower.

In low meadows and moist, open woods, Quebec to Minnesota, south to Georgia and Iowa. Flowering in September and October.

The Smaller Fringed Gentian (Gentiana procera Holm) has linear leaves and the corolla segments fringed mainly on the sides with shorter hairs. It is rather rare in this State.

The Stiff Gentian (Gentiana quinquefolia Linnaeus), (Figure XXV) has smaller flowers in dense clusters at the ends of the branches; the blue corolla tube is one-half to three-fourths of an inch long with five equal, triangular lobes which are not fringed. Rather common in dry or moist shady woods.

Closed Blue or Blind Gentian

Dasystephana andrewsii (Grisebach) Small

Plate 168

Stems stout, smooth, 1 to 2 feet high, and usually unbranched, from a perennial root. Leaves opposite, ovate to lanceolate, three to seven-nerved, pointed at the apex, narrowed or rounded at the sessile base, rough-margined. Flowers 1 to 1½ inches high, sessile in dense, terminal clusters and usually with one or two in the axils of the upper leaves. Each flower with two bracts beneath the calyx. Calyx lobes five, ovate-lanceolate, ciliate, somewhat spreading. Corolla blue, rarely white, club-shaped, nearly or quite closed at the summit, its lobes indistinct, the intervening appendages very broad and light colored. Stamens five, their anthers united into a tube.

In moist soil and damp thickets, Quebec to Manitoba, south to Georgia and Nebraska. Flowering from late in August to October.

The Soapwort Gentian (Dasystephana saponaria (Linnaeus) Small) closely resembles the Closed Gentian, but the leaves are usually pointed at each end and the corolla lobes distinct, and longer than or equaling the intervening plaits. The Yellowish Gentian (Dasystephana flavida (A. Gray) Britton) has a greenish or yellowish white corolla, distinctly open at the summit, and ovate-lanceolate leaves.

The Narrow-leaved or Bog Gentian (Dasystephana linearis (Froelich) Britton) possesses an open, blue corolla and linear-lanceolate

FRINGED GENTIAN
Gentiana crinita

CLOSED BLUE OR BLIND GENTIAN

Dasystephana andrewsii

Figure XXV
Stiff Gentian; Agueweed
(Gentiana quinquefolia Linnaeus)

leaves. These, together with the rare Gray's Gentian (Dasystephana grayi (Kusnezow) Britton), are all natives of New York, but not so common as the Closed Gentian, although the Narrow-leaved or Bog Gentian is frequent in the Adirondacks.

Buckbean Family

Menyanthaceae

Buckbean; Marsh Trefoil

Menyanthes trifoliata Linnaeus

Plate 169

Rootstock creeping, scaly, thick, often a foot or more long. Leaves erect or ascending from the growing end of the rootstock, 2 to 10 inches long, divided into three leaflets, the petioles sheathing the stem at their bases. Leaflets usually obovate, blunt at the apex, narrowed at the base, 1 to 3 inches long. Flowers white, few or several, forming a cluster or raceme on a long, leafless stalk which rises from the rootstock. Each flower about one-half of an inch long; calyx five-lobed; corolla short funnel-form, five-lobed, densely bearded with white hairs within, the lobes spreading; stamens five, fastened to the inside of the corolla tube and shorter than the tube. Fruit an ovoid, blunt capsule about one-third of an inch long.

In bogs, marshes and wet places, Greenland to Alaska, south to Long Island, Pennsylvania, Nebraska and California. Flowering from May to July.

Dogbane Family

Apocynaceae

Spreading Dogbane

Apocynum androsaemifolium Linnaeus

Plate 170a

A rather slender, branching herb with perennial, horizontal rootstock and stems 1 to 4 feet high, with milky juice. Leaves entire, opposite, ovate or oval, pointed at the apex, narrowed or rounded at the base, smooth above, pale and more or less hairy beneath, $1\frac{1}{2}$ to 4 inches long, three-

BUCKBEAN; MARSH TREFOIL
Menyanthes trifoliatus

A. SPREADING DOGBANE
Apocynum androsaemifolium

B. GRONOVIUS'S DODDER; LOVE VINE
Cuscuta gronovii

fourths to 2½ inches wide; petioles short and usually less than one-third of an inch long. Flowers fragrant, pink or pink and white, numerous in loose, terminal clusters (cymes); each flower about one-fourth of an inch broad; calyx with five short, pointed lobes; corolla narrowly bell-shaped with five reflexed lobes; stamens five, attached to the base of the corolla within and alternate with its lobes. Fruit a slender pod (follicle) about 4 inches long and one-eighth of an inch thick.

In fields and thickets, New Brunswick to British Columbia, south to Georgia and Arizona. Flowering in June and July.

About five closely related species, all with smaller flowers, are recognized by botanists as native to this State.

Milkweed Family

Asclepiadaceae

The Milkweeds are familiar and well-known plants, but in order to distinguish some of the closely related species, a special study of the flower structure is necessary. They are perennial herbs with milky juice and flowers in umbellate clusters. The calyx is small and inferior (below the ovary), five-lobed; its tube short or none. The corolla varies in shape from bell-shaped to urn-shaped, funnelform or saucer-shaped, five-lobed; the lobes or segments commonly reflexed when the flower is fully open. The flowers of the Milkweeds are further characterized by possessing a third floral envelope, consisting of a five-lobed or five-parted crown (corona) between the corolla and the stamens and attached to one or the other. Stamens five, fastened to the corolla, usually near its base, sometimes the filaments of the stamens being attached to one another. The ovary consists of two carpels, with two short styles connected at the summit by a shield-shaped stigma. The fruit consists of two large, fleshy pods (follicles) developing from each flower, but usually only one or a very few flowers of an umbel develop fruit. Seeds flattened and appendaged by a long coma of white or whitish hairs.

Key to the New York Milkweeds

Corona hoods unappendaged, entire at the apex; umbels of flowers sessile; flowers green (Green Milkweed).....*Acerates viridiflora*

Corona hoods each with an incurved horn within (Asclepias)

Corolla and corona orange; leaves mostly alternate.....*Asclepias tuberosa*

Corolla bright red or purple; leaves opposite

Flowers one-third of an inch broad or broader; corona hoods one-fourth of an inch high; leaves oblong, ovate or ovate-oblong; hoods oblong and pointed.....*Asclepias purpurascens*

Flowers one-third of an inch broad or less; corona hoods one-twelfth to one-eighth of an inch high

Plant nearly or quite glabrous; leaves lanceolate or oblong-lanceolate.....*Asclepias incarnata*

Plant pubescent; leaves oblong.....*Asclepias pulchra*

Corolla greenish, purplish, yellowish or white; leaves opposite

Leaves ovate, oblong, ovate-lanceolate, obovate or orbicular

Plants, at least the lower surfaces of the leaves, canescent or tomentose; corona hoods short and blunt.....*Asclepias syriaca*

Plants smooth throughout or minutely pubescent above; umbels on long stalks

Leaves wavy-margined and sessile or nearly so

Leaves cordate-clasping.....*Asclepias amplexicaulis*

Leaves rounded at the base and short petioled.....*Asclepias intermedia*

Leaves petioled and flat

Corolla greenish, umbels loose, pedicels drooping.....*Asclepias exaltata*

Corolla white; umbels dense.....*Asclepias variegata*

Corolla pink or white, some of the leaves verticillate in fours.....*Asclepias quadrifolia*

Leaves narrowly linear, mostly verticillate in threes to sixes; hoods entire.....*Asclepias verticillata*

Butterfly Weed; Pleurisy Root

Asclepias tuberosa Linnaeus

Plate 171

Stems very hairy, rather stout, usually branched above, erect or ascending, 1 to 2 feet high from a stout, perennial root, with slightly milky sap. Leaves alternate, oblong to lanceolate, pointed or blunt at the apex, narrowed, rounded or heart-shaped at the base, sessile or very short petioled, 2 to 6 inches long, one-fourth to 1 inch wide. Flowers bright orange or yellow, numerous in terminal, cymose umbels; lobes or segments of the corolla about one-fourth of an inch long, reflexed in flower; the segments of the five-parted crown (corona) about one-third of an inch long; hoods erect, oblong, bright orange or yellow and two to three times as long as the stamens and longer than the filiform horns. Fruit a finely pubescent pod (follicle), 4 to 5 inches long.

In dry fields and roadsides, Maine to Ontario and Minnesota, south to Florida and northern Mexico. Flowering from July to September.

Swamp Milkweed

Asclepias incarnata Linnaeus

Plate 172

Stems slender, often 2 to 5 feet tall and leafy throughout, more or less branched, smooth or minutely pubescent in two lines along the upper part of the stem. Leaves opposite, oblong-lanceolate, pointed at the apex, narrowed or sometimes slightly heart-shaped at the base, 3 to 7 inches long, one-half to 1½ inches wide; petioles very short. Flowers numerous in many-flowered terminal, stalked umbels; pedicels of the flowers pubescent, one-half to 1 inch long; corolla red or rose-purple, its lobes oblong; column more than one-half as long as the obtuse pink or purplish hoods; horns slender, incurved, longer than the hoods. Fruit an erect pod (follicle), 2 to 4 inches long.

In marshy or swampy places, New Brunswick to Saskatchewan, south to Tennessee and Colorado. Flowering from July to September.

The Hairy Swamp Milkweed (Asclepias pulchra Ehrhart) is similar to this species, but is softly tomentose-pubescent on the stems, the leaves smooth above and pubescent beneath, the flowers commonly lighter red or pink.

Blunt-leaved Milkweed

Asclepias amplexicaulis J. E. Smith

Plate 173

Stems stout, erect or nearly so, smooth, pale green and glaucous, rarely somewhat pubescent, 2 to 3 feet high. Leaves opposite, oblong-ovate or oblong, blunt and minutely pointed at the apex, cordate-clasping at the base, 3 to 5 inches long, 1 to 2 inches wide, the margins wavy-crisped. Flowers numerous in a terminal, solitary, long-stalked umbel; pedicels of the flowers downy, about 1 inch long. Flowers greenish purple; corolla segments oblong, about one-third of an inch long; column thick, hoods pinkish, shorter than the subulate incurved horn. Fruiting follicles 4 to 6 inches long, erect on recurved pedicels.

In dry, mostly sandy soil, New Hampshire to Minnesota, south to Florida and Texas. Flowering in June and July. Young plants of this and other species of milkweed are said to make excellent greens.

The Intermediate Milkweed (Asclepias intermedia Vail) has been found only at Lawrence, Long Island, and is probably a hybrid between A. syriaca and A. amplexicaulis.

Four-leaved Milkweed

Asclepias quadrifolia Jacquin

Plate 174

Stems rather slender, rarely branched, 1 to 2 feet high. Leaves thin, slightly pubescent on the veins beneath, ovate to lanceolate, 2 to 6 inches long, one-half to 2 inches wide, long pointed at the apex, the middle leaves in whorls of four, the upper and lower leaves smaller and usually opposite. Flowers numerous in one to four terminal umbels on slender stalks; corolla

BUTTERFLY WEED; PLEURISY ROOT

Asclepias tuberosa

SWAMP MILKWEED
Asclepias incarnata

BLUNT-LEAVED MILKWEED

Asclepias amplexicaulis

pink or nearly white, its lobes lanceolate-oblong; column short, hoods white, obtuse at the apex, twice as long as the anthers and short incurved horns. Fruiting follicles 3 to 5 inches long, erect on ascending pedicels.

In woods and thickets, Maine to Minnesota, south to Alabama and Arkansas.

The Polk or Tall Milkweed (Asclepias exaltata (Linnaeus) Muhlenberg) is 3 to 6 feet tall, with thin, oval, ovate or oblong leaves, long pointed at each end. Flowers greenish purple, drooping and arranged in few or several umbels toward the top of the plant. Frequent in woods and thickets.

The White Milkweed (Asclepias variegata Linnaeus) occurs only from southern New York southward. The leaves are opposite, ovate, obovate or oblong, thick in texture and sometimes the middle ones verticillate in fours. Flowers white or the segments purplish near the base.

The Whorled Milkweed (Asclepias verticillata Linnaeus) is very slender and leafy, the leaves linear and verticillate in threes to sixes. Flowers greenish white. It is found in dry or sandy fields in southern New York, and rarely in other portions of the State.

Common Milkweed; Silkweed

Asclepias syriaca Linnaeus

Plate 175

Stems stout, rarely branched, 2 to 5 feet high, finely pubescent above. Leaves oblong to ovate, finely but densely hairy beneath, smooth above when mature, pointed or blunt at the apex, rounded or slightly heart-shaped at the base, 4 to 8 inches long, 2 to 4 inches wide; petioles short, one-fourth to three-fourths of an inch long. Flowers numerous in one to several umbels on long stalks from the upper axils of the leaves; corolla purplish to greenish purple or greenish white, the segments oblong-lanceolate, one-fourth to one-third of an inch long; column short and thick, the hoods ovate-lanceolate with a tooth on each side, longer than the anthers and the incurved horn. Fruiting follicles 3 to 5 inches long, erect on recurved stalks, tomentose and covered with short, soft processes.

Roadsides, fields and waste places, New Brunswick to Saskatchewan, south to North Carolina and Kansas. Flowering from July to September.

The form illustrated here is the purple-flowered form which is not so common as the greenish purple-flowered form.

The Purple Milkweed (Asclepias purpurascens Linnaeus), rather rare in this State, has smooth or puberulent stems, ovate, elliptic or oblong leaves, smooth above and finely pubescent beneath; flowers deep purple; corona hoods oblong or ovate and nearly twice as long as the anthers, the horns broad at the base, slender and incurved at the apex. The follicles are downy and without the soft processes of the Common Milkweed.

Morning-glory Family

Convolvulaceae

Upright or Low Bindweed

Convolvulus spithamaeus Linnaeus

Plate 164b

Stems erect or ascending, sometimes the tip of the stem feebly twining, 5 to 15 inches high, hairy or in late summer becoming nearly smooth. Leaves alternate, oval, short petioled or the upper leaves sessile, usually blunt or but slightly pointed at the apex, somewhat heart-shaped or rounded at the base, 1 to 2 inches long, one-half to 1½ inches wide. Flowers white, open funnelform, about 2 inches long, solitary on long stalks from the axils of the middle or lower leaves; the calyx inclosed by two oval bracts.

In dry, sandy or rocky fields, banks and open woods, Nova Scotia to Manitoba, south to Florida and Kentucky. Flowering in June and July. Rarely seen in sections with rich loamy or clayey soils.

Hedge or Great Bindweed

Convolvulus sepium Linnaeus

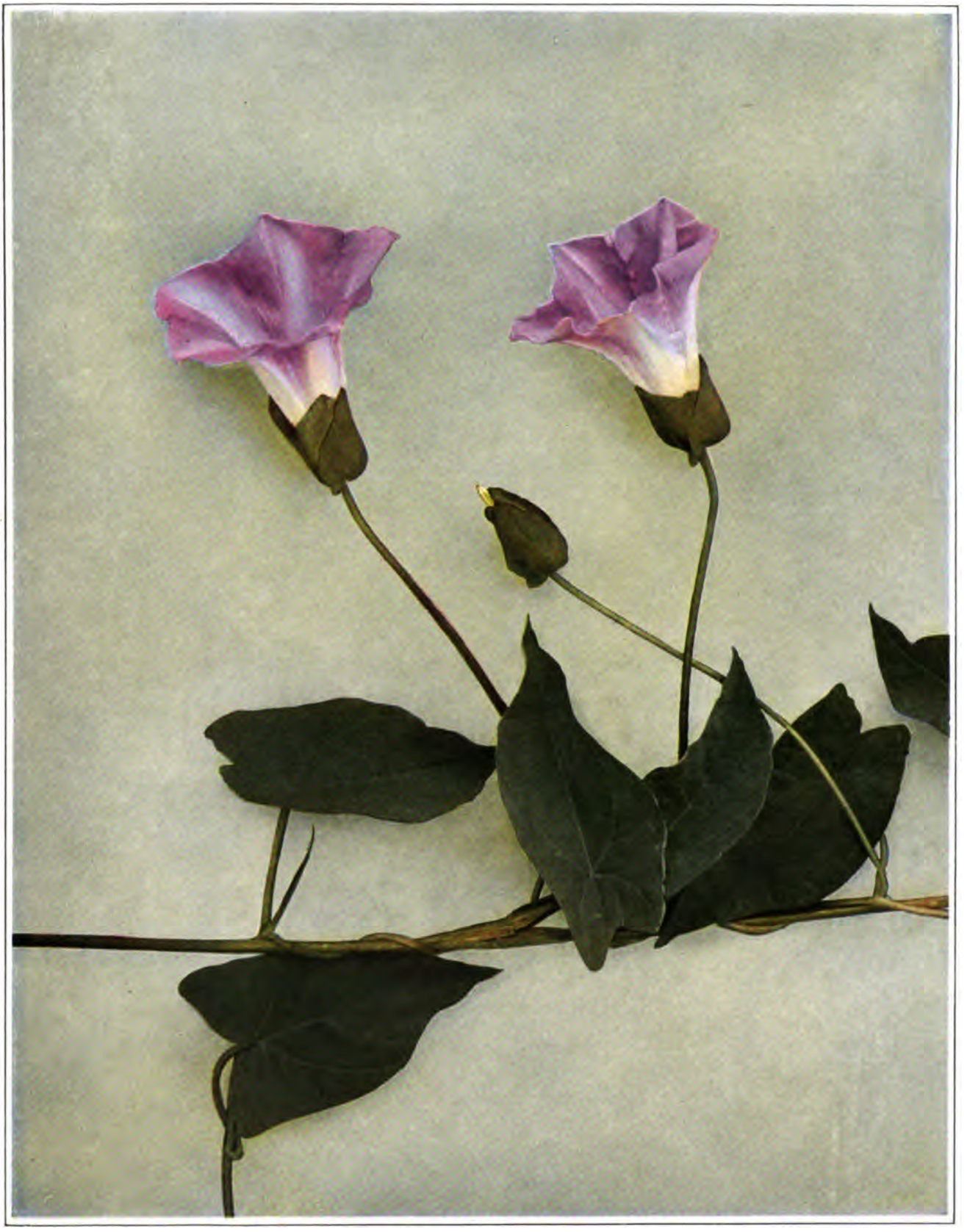
Plate 176

Stems high, twining or trailing, often several feet long, smooth or sometimes slightly hairy. Leaves triangular in outline, slender petioled, hastate at the base, pointed at the apex, 2 to 5 inches long, the basal lobes divergent, usually pointed or toothed. Flowers pink with white stripes or entirely white, funnelform, 2 to 3 inches long, with a spreading, slightly

FOUR-LEAVED MILKWEED
Asclepias quadrifolia

COMMON MILKWEED; SILKWEED

Asclepias syriaca



HEDGE OR GREAT BINDWEED
Convolvulus sepium

five-lobed margin, solitary on slender axillary stalks; the calyx inclosed by two large, ovate, pointed bracts; stamens five, attached to the base of the corolla tube within. Fruit a globular, thin-walled capsule, about one-third of an inch in diameter, containing four black, angled seeds.

Roadsides, fields and thickets, usually in moist soil, Newfoundland to British Columbia, south to Georgia and New Mexico. Often a troublesome weed. Flowering from June to August. The pink and white flowered form is thought by some to be the native form of this species, which is in part introduced and naturalized from Europe.

The Small Bindweed (Convolvulus arvensis Linnaeus) is smaller in every way, trailing on the ground, the leaves 1 to 2 inches long, sagittate or hastate at the base; flowers pink or nearly white, about 1½ inches long. Native of Europe and common as a weed in fields and waste places.

The Trailing or Hedge Bindweed (Convolvulus repens Linnaeus) resembles the Great Bindweed, but is more softly hairy or tomentose. Leaves ovate or oblong, cordate or sagittate at the base. Flowers pink or white, about 2 inches long. It is common in moist thickets and marshes along the coast.

Dodder Family

Cuscutaceae

Gronovius's Dodder; Love Vine

Cuscuta gronovii Willdenow

Plate 170b

A slender, herbaceous annual with yellowish or orange-colored stems, climbing over and around various shrubs and herbs. Flowers numerous, short-stalked in dense clusters. Calyx five-lobed without bracts, the lobes ovate, blunt, shorter than the corolla tube. Corolla white, bell-shaped, about one-eighth of an inch long, with five ovate, rounded and blunt spreading lobes, the lobes nearly as long as the tubular part of the corolla. Within the corolla there are five fringed scales alternate with the lobes of the corolla and shorter than the corolla tube. Stamens five, alternate with the corolla lobes and inserted upon the upper part of the tube of the corolla. Fruit a globular capsule, one-eighth of an inch in diameter, enveloped or capped by the withering corolla.

Parasitic on various shrubs and herbs in low meadows, thickets and open swamps, Nova Scotia to Manitoba and Montana, south to Florida and Texas. Flowering in July and August.

In most localities this is the commonest species of Dodder, although in some places there are to be found other species, especially Cuscuta compacta Jussieu; the Flax Dodder (Cuscuta epilinum Weihe), always upon flax; and the Clover Dodder (Cuscuta epithymum Murray) usually upon clover.

Phlox Family

Polemoniaceae

Garden Phlox

Phlox paniculata Linnaeus

Plate 177

Stems stout or slender, erect, simple or somewhat branched above, smooth or slightly pubescent, 1½ to 5 feet tall, usually several stems from a perennial root. Leaves opposite, entire, thin, oblong to oblong-lanceolate, long pointed at the apex, usually narrowed at the base, 2 to 6 inches long, one-half to 1½ inches wide. Flowers in dense, terminal, paniculate clusters, forming an inflorescence 3 to 12 inches long; calyx with five small, slender teeth; corolla pink, purple or white, about an inch long, consisting of a slender tube and an expanded limb with five obovate lobes, the limb one-half to two-thirds of an inch broad. Fruit a small, oval, blunt capsule.

In woods and thickets, native from Pennsylvania to Illinois, south to Florida, Louisiana and Kansas. Common in cultivation. Freely escaping from gardens, and established in the northeastern states. In cultivation consisting of many varieties, differing in leaf form, size and color of flowers and in pubescence. Flowering from July to September.

Ground or Moss Pink

Phlox subulata Linnaeus

Plate 178

Stems densely tufted and extensively branched, forming mats, often of considerable extent, pubescent or nearly smooth. Leaves linear-lanceo-

GARDEN PHLOX

Phlox paniculata

GROUND OR MOSS PINK
Phlox subulata

late, one-third to 1 inch long, stiff and clustered at the nodes of the stems, their margins ciliate. Flowers on slender stalks, clustered in simple few-flowered cymes; calyx teeth about as long as the calyx tube; corolla pink, purplish with a darker eye, or sometimes white, about one-half to two-thirds of an inch broad, the five lobes of the corolla entire or often slightly indented at the apex.

In dry, sandy or rocky soil of fields, banks and open woods, southern New York to Michigan, south to Florida and Kentucky. Flowering in May and June. Occasionally cultivated farther north.

The Wild Sweet William (Phlox maculata Linnaeus) is found wild from southern New York southward, and frequently escaped from cultivation farther northward. Its stems are usually spotted with purple; leaves lanceolate or the upper ones ovate-lanceolate; flowers pink or purple, rarely white, in compact clusters forming a many-flowered terminal inflorescence, 4 to 10 inches long. A race with white flowers and unspotted stems is known as Phlox maculata var. candida Michaux (P. suaveolens Aiton).

The Downy or Prairie Phlox (Phlox pilosa Linnaeus) occurs rather locally in New York. It is softly hairy with linear or lanceolate, long-pointed leaves and pink, purple or white flowers forming a terminal cluster.

The Wild Blue Phlox (Phlox divaricata Linnaeus) (Figure XXVI) is frequent in some localities. It is finely viscid-pubescent, the stems rooting at the nodes near the base, but the tops erect; leaves oblong or ovate, those on the flowering stems lanceolate or ovate-lanceolate; flowers fragrant, bluish, the corolla lobes deeply notched at the ends.

American Jacob's Ladder

Polemonium van-bruntiae Britton

Plate 179

Stems herbaceous, erect, smooth below, a little pubescent above, 1 to 3 feet tall, from a stout, horizontal, perennial rootstock clothed with numerous fibrous roots. Basal leaves 6 to 12 inches long, odd-pinnate, with eleven to seventeen sessile, ovate-lanceolate, pointed leaflets, one-half to 1½ inches long; stem leaves and upper leaves with only three to seven leaflets. Flowers bluish purple or blue, three-fourths to 1 inch broad in

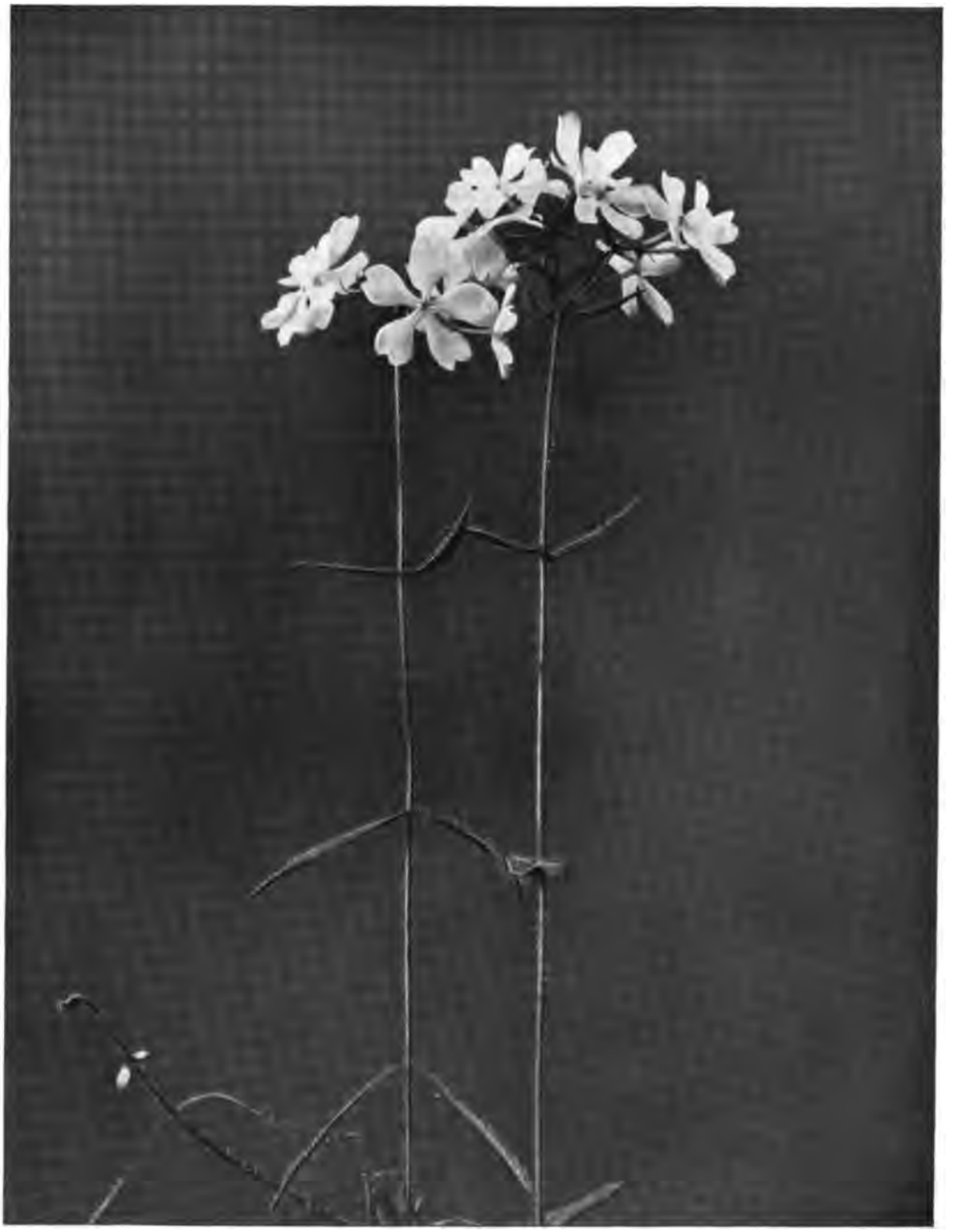


Figure XXVI
Wild Blue Phlox
(Phlox divaricata Linnaeus)

AMERICAN JACOB'S LADDER

Polemonium van-bruntiae

terminal or panicled cymose clusters; corolla tubular-campanulate with five rounded lobes, the five stamens projecting out of the flower.

In swamps, marshy meadows and along streams, Vermont and New York to Maryland. Flowering from the latter part of May until July. A local plant, as beautiful as it is rare. It has been found locally abundant at several places in the southern and western portions of the Catskills, in the Schoharie valley, southern Herkimer county and at Peterboro, Madison county.

The Greek Valerian or Bluebell (Polemonium reptans Linnaeus) occurs in woods from western New York, westward. It is entirely smooth, the stems weak and reclining, only the tips erect; the blue flowers one-half to two-thirds of an inch broad and the stamens not projecting from the flower.

Waterleaf Family

Hydrophyllaceae

Virginia Waterleaf

Hydrophyllum virginianum Linnaeus

Plate 180

Stems slender, smooth or but slightly pubescent, usually unbranched, ascending or erect but not stiff, 1 to 3 feet long, from a perennial, scaly rootstock. Lower and basal leaves, 6 to 10 inches long, pinnately divided into five to seven oblong-ovate or ovate-lanceolate, pointed, toothed or incised segments, 1 to 2 inches long; upper leaves similar but smaller, shorter petioled and with fewer segments. Flowers white or violet (at high altitudes nearly purple) in simple or forked, slender-stalked cymes, the pedicels of the flowers hairy. Calyx deeply parted into five linear, hairy, spreading segments. Corolla about one-third of an inch long, bell-shaped, with five oblong, blunt lobes. Stamens five, projecting from the flower. Fruit a capsule about one-sixth of an inch in diameter.

In rich woods and thickets, Quebec to South Dakota, south to South Carolina and Kansas. Flowering in June and July or in the north as late as August.

The Appendaged Waterleaf (Hydrophyllum appendiculatum Michaux) is rough-hairy all over; the flowers violet to purple and one-half to two-thirds of an inch long with short, reflexed appendages between the calyx lobes. The Broad-leaved Waterleaf (Hydrophyllum canadense Linnaeus) has leaf blades nearly orbicular, palmately five to nine-lobed and the entire plant smooth or nearly so.

Borage Family

Boraginaceae

Virginia Cowslip; Bluebells

Mertensia virginica (Linnaeus) De Candolle

Plate 181

Stems erect or nearly erect, simple or somewhat branched, 1 to 2 feet tall from a perennial root; smooth and rather stout. Leaves oblong, the upper ones sessile, blunt at the apex, 2 to 5 inches long, the lower leaves tapering into margined petioles, obovate in shape. Flowers blue-purple, or blue turning purple with age, showy, about 1 inch long, in short racemes forming a terminal corymbose inflorescence; calyx lobes five, oblong-lanceolate, blunt; corolla trumpet-shaped with a slender tube and a five-lobed, plaited limb, pubescent at the base within but not crested in the throat; stamens five, attached to the inside of the corolla tube.

In low meadows and along streams, central New York and southern Ontario to New Jersey, South Carolina, Minnesota and Kansas. Flowering in April and May.

Forget-me-not; Mouse-ear; Scorpion Grass

Myosotis scorpioides Linnaeus

Plate 182a

A small, slender plant with perennial rootstocks or stolons freely rooting at the nodes; stems pubescent, decumbent below, the ends ascending or erect, 6 to 18 inches long. Leaves oblong to oblong-lanceolate, blunt, narrowed at the base, 1 to 3 inches long, only the lower ones petioled. Flowers in several or many-flowered loose racemes, curving over at the

VIRGINIA WATERLEAF

Hydrophyllum virginianum

Photographed by J. Horace McFarland

VIRGINIA COWSLIP; BLUEBELLS

Mertensia virginica

A. FORGET-ME-NOT; MOUSE-EAR; SCORPION GRASS
Myosotis scorpioides

B. BLUE CURLS; BASTARD PENNYROYAL
Trichostema dichotomum

tip. Calyx lobes five, equal, triangular-ovate, pointed, shorter than the calyx tube. Corolla one-fourth to one-third of an inch broad with five rounded lobes, light blue with a yellow eye. Stamens five, not projecting out of the flower; ovary four-divided, in fruit becoming four small, angled nutlets.

In brooks, marshes and wet meadows, Newfoundland to New York, Ontario, Pennsylvania and Tennessee. Said to be a native of Europe, but well established and common in many places, often far from habitations. Flowering from May to July.

Blueweed; Viper's Bugloss

Echium vulgare Linnaeus

Plate 161a

A very bristly-hairy, biennial, herbaceous weed, with a long, black taproot, the erect, spotted stem 1 to 2½ feet high and finally much branched. Leaves entire, hairy, oblong to linear-lanceolate, 2 to 6 inches long, sessile, with the exception of the basal leaves which are narrowed into long petioles. Flowers showy, bright blue (pinkish in bud, reddish-purple when old), numerous, clustered on short, one-sided, curved spikes which are densely hairy, rolled up at first and straightening out as the flowers expand. Calyx deeply five-parted, corolla about an inch long, funnelform, unequally five-lobed with five reddish stamens inserted on the tube of the corolla, unequal in length and exserted beyond the corolla. Fruit consists of four roughened or wrinkled, one-seeded nutlets, dark brown, fixed by a flat base, sharply angled on the inner face, rounded on the outer, possessing a fancied resemblance to a serpent's head, whence the plant derives one of its common names.

Native of Europe, thoroughly naturalized throughout the eastern and middle states in waste places, roadsides and fields, preferring limestone and gravelly or poor soil. It seems to have been introduced into this country as early as 1683, and is now a troublesome weed in pasture lands and old fields.

The Hound's-tongue or Gipsy Flower (Cynoglossum officinale Linnaeus) is another plant of European origin, common as a weed in fields and waste places. Stems erect and leafy, 1 to 3 feet high, pubescent and with a rather strong unpleasant odor. Flowers numerous in simple or branched racemes; corolla reddish purple, about one-third of an inch broad. Fruit pyramidal in shape consisting of four hispid nutlets. It is also called Dog's-tongue, Sheep-lice and Dog Bur.

Vervain Family

Verbenaceae

Blue or False Vervain

Verbena hastata Linnaeus

Plate 183b

Stems erect, stiff, four-sided and usually branched, roughish pubescent, 2 to 7 feet tall from a perennial root. Leaves oblong-lanceolate to lanceolate, pointed at the apex, sharply toothed, 3 to 6 inches long, the lower leaves sometimes hastately three-lobed at the base, the others blunt or abruptly tapering to the petiole. Flowers blue, numerous in slender-panicled spikes, 2 to 6 inches long. Calyx tubular, somewhat unequally five-toothed; corolla about one-eighth of an inch broad, the limb five-lobed and very slightly two-lipped, dark blue, varying sometimes to pink or rarely white.

In moist places, fields, meadows and roadsides, Nova Scotia to British Columbia, south to Florida and Arizona. Flowering from June to September.

Mint Family

Labiatae

Hairy Germander or Wood Sage

Teucrium occidentale A. Gray

Plate 184

Stems erect, four-angled, hairy, slender or rather stout, usually branched with ascending branches, 1 to 3 feet high. Leaves ovate-lanceolate, thin,

pointed at the apex, sharply toothed, rounded at the base, 1 to 4 inches long, one-half to 1½ inches wide with slender petioles shorter than the blades. Flowers purplish pink in dense, terminal, spikelike panicles. Calyx ten-nerved, unequally five-toothed, bracts, calyx and axis of the spike hairy and often glandular. Corolla one-third to one-half of an inch long, with a short tube, the limb irregularly five-lobed, the two short upper lobes oblong, the lower lobes broader and declined. Stamens four, projecting from between the two upper lobes of the corolla.

In moist soil in woods and thickets. Maine to Ontario and British Columbia, south to eastern Pennsylvania, Ohio and New Mexico. Flowering from July to September.

The American Germander or Wood Sage (Teucrium canadense Linnaeus) is very similar, but the calyx, bracts etc. are canescent without being hairy or glandular. The Narrow-leaved Germander (Teucrium littorale Bicknell), common on or near the coast, has narrower, sharply toothed leaves, often densely canescent.

Blue Curls; Bastard Pennyroyal

Trichostema dichotomum Linnaeus

Plate 182b

A small, annual, minutely viscid-pubescent plant, with rather stiff, much-branched stems, 6 to 20 inches high, the branches spreading or ascending. Leaves oblong or oblong-lanceolate, rather blunt at the apex, narrowed at the base into short petioles, 1 to 3 inches long, the upper leaves smaller. Flowers one-half to three-fourths of an inch long, borne one to three together on two-bracteolate stalks in a paniculate inflorescence. Calyx oblique, very unequally five-lobed, the three upper lobes much longer and more united than the two lower ones. Corolla blue, pinkish or rarely nearly white, the tube shorter than the five-cleft limb, the lobes or segments of the corolla more or less declined. Stamens four, blue or violet, curved and projecting far out of the flower.

In dry or sandy fields, Maine to New York, Ontario and Missouri, south to Florida and Texas. Flowering from July to October.

Mad-dog or Blue Skullcap

Scutellaria lateriflora Linnaeus

Plate 185

Stems slender, erect or ascending, leafy and usually branched, 5 to 25 inches high, from a perennial root, propagating by slender stolons. Leaves ovate-oblong or ovate-lanceolate, thin, pointed at the apex, rounded or slightly heart-shaped at the base, coarsely toothed, 1 to 3 inches long, on slender petioles, the upper leaves smaller. Flowers blue, several in axillary and also terminal one-sided racemes, one-fourth to nearly one-half of an inch long, sometimes nearly white; the lips of the corolla about equal, the upper lip arched. Calyx two-lipped, the lips entire, the upper one with a crest or protuberance upon its back.

In wet meadows and marshes, Newfoundland to British Columbia, south to Florida, New Mexico and Oregon. Flowering from July to September.

Hooded or Marsh Skullcap

Scutellaria galericulata Linnaeus

Plate 186a

Stem erect and usually branched, 1 to 3 feet high, finely pubescent, from a perennial root, propagating by threadlike stolons but not tuber-bearing. Leaves oblong-lanceolate to oblong-ovate, thin, short petioled, the upper ones sessile, pointed at the apex, rounded or heart-shaped at the base, the margins dentate with low teeth or the upper leaves smaller and entire. Flowers solitary in the axils of the upper leaves, usually turned in the same direction and appearing paired, blue; the corolla about an inch long with a slender tube and slightly enlarged throat.

In swamps, wet meadows and along streams, Newfoundland to Alaska, south to New Jersey, western North Carolina, Ohio, Nebraska and Washington. Also in Europe and Asia. Flowering from June to September.

There are three additional species of Scutellaria in New York of more limited distribution than the two preceding. The Showy Skullcap

A. HOARY MOUNTAIN MINT; CALAMINT
Koellia incana

B. BLUE OR FALSE VERVAIN
Verbena hastata

HAIRY GERMANDER OR WOOD SAGE
Teucrium occidentale

MAD-DOG OR BLUE SKULLCAP
Scutellaria lateriflora

(Scutellaria serrata Andrews) with oval or elliptic, coarsely toothed leaves and blue flowers about an inch long in terminal clusters, is the most conspicuous species of the genus in this State. It is found from southern New York southward.

The Larger or Hyssop Skullcap (Scutellaria integrifolia Linnaeus) of about the same range, has thin, linear to oblong, entire, blunt leaves and blue flowers, usually whitish beneath, in terminal racemes, the corolla 1 to 1¼ inches long.

Self-heal; Heal-all

Prunella vulgaris Linnaeus

Plate 187

Stems slender, procumbent or ascending, rooting at the nodes below, the tips at least erect and simple or branched, 3 to 20 inches high, pubescent or nearly smooth and four-angled. Leaves ovate, oblong or oblong-lanceolate, blunt or somewhat pointed at the apex, usually narrowed at the base, entire or with a few teeth, 1 to 4 inches long, the lower leaves usually shorter. Flowers in dense terminal spikes which are one-half to 1 inch long, becoming 2 to 4 inches long in fruit. Calyx oblong, green or sometimes purplish, recticulate-veined, deeply two-lipped, closed in fruit, upper lip nearly truncate with three low teeth, lower lip two-cleft with lanceolate teeth. Corolla violet, purple or lilac, sometimes white, one-third to one-half of an inch long, the top of the flower strongly two-lipped, the upper lip entire and arched, the lower lip three-lobed and spreading or drooping; the four stamens ascending under the upper lip of the corolla.

In fields, woods and waste places, everywhere common. Probably native but also naturalized from Europe. Flowering from May to October.

Dragonhead; Lion's Heart

Dracocephalum virginianum Linnaeus

Plate 188

Stems erect or the base somewhat decumbent, slender or stout, simple or usually branched above, 1 to 4 feet tall. Leaves firm, oblong-lanceolate or lanceolate, sessile or the lowest ones petioled, sharp pointed at the apex, narrowed at the base, the margins sharply toothed, 2 to 5 inches long and

usually ascending. Flowers numerous in dense spikes, terminating the stem and branches, the spikes becoming 4 to 8 inches long in fruit. Calyx bell-shaped with five ovate, pointed teeth about half as long as the tube of the calyx, in fruit becoming oblong, one-third to nearly one-half of an inch long. Corolla pale purple, rose or rarely white, about 1 inch long, temporarily remaining in whatever position it is placed, which accounts for one of the common names of the plant (Obedient Plant). Tube of the corolla gradually enlarged upward, its limb strongly two-lipped; upper lip concave, rounded, entire; lower lip spreading, three-lobed, the middle lobe notched at the apex; the four stamens ascending under the upper lip of the corolla, their filaments pubescent.

In moist meadows, roadsides and fields, Quebec to Minnesota, south to Florida and Texas. Flowering from July to September.

Oswego Tea; American Bee Balm

Monarda didyma Linnaeus

Plate 189

Stems slender or rather stout, pubescent or nearly smooth, 2 to 4 feet high from a perennial root, simple or sparingly branched above. Leaves thin, ovate or ovate-lanceolate, usually pubescent, at least beneath, sharp pointed at the apex, rounded or narrowed at the base, sharply toothed on the margins, 2 to 6 inches long, 1 to 3 inches wide, the petioles one-half to 1 inch long or the upper ones shorter. Flowers in terminal, solitary clusters at the ends of the branches or stems, subtended by several red or partially red bracts. Calyx tubular, narrow, fifteen-nerved with five small, awnlike teeth, smooth without, hairy within. Corolla scarlet, $1\frac{1}{2}$ to 2 inches long, the limb two-lipped, the upper lip erect, the lower lip spreading and three-lobed, the middle lobe the largest. Stamens four, but only two of them anther-bearing and projecting out of the flower, the other two stamens rudimentary.

In moist soil, especially along streams, Quebec to Michigan, south to Georgia and Tennessee. Flowering in July and August.

A. HOODED OR MARSH SKULLCAP
Scutellaria galericulata

B. FIELD OR WILD BASIL; BASILWEED
Clinopodium vulgare

SELF-HEAL; HEAL-ALL
Prunella vulgaris

DRAGONHEAD; LION'S HEART

Dracocephalum virginianum

Wild Bergamot

Monarda fistulosa Linnaeus

Plate 190a

Stems slender, usually branched, especially above, 2 to 3 feet high, hairy or nearly smooth, from a perennial root. Leaves opposite, lanceolate, narrowed or heart-shaped at the base. Flower clusters solitary and terminal or rarely also in the uppermost axils; bracts whitish or purplish. Calyx teeth awl-shaped, about as long as the diameter of the tubular calyx. Corolla yellowish pink, lilac or purplish, 1 to 1½ inches long, hairy on the upper lip, otherwise resembling in floral structure the flowers of the Oswego Tea.

On dry hills and in thickets, Maine to Minnesota, south to Florida and Kansas. Flowering from June to September.

The Pale Wild Bergamot (M o n a r d a m o l l i s Linnaeus) possesses a short, fine pubescence and has paler green leaves, otherwise closely resembling M. f i s t u l o s a.

Purple Bergamot

Monarda media Willdenow

Plate 190b

Resembling the common Wild Bergamot, but usually very sparingly hairy or nearly smooth and bright green; bracts of the inflorescence deep purple and very conspicuous; the flowers purple or purple-red and showy.

In moist thickets, Maine to Ontario, south to Pennsylvania and Virginia. Flowering from June to August.

The Horsemint (M o n a r d a p u n c t a t a Linnaeus) is densely pubescent or downy with lanceolate, linear-lanceolate or narrowly oblong leaves; flower clusters terminal and also axillary in the upper leaves; bracts white or purplish and showy; corolla yellowish, spotted with purple, about an inch long. Common in dry fields, southern New York southward and westward.

Field or Wild Basil; Basilweed

Clinopodium vulgare Linnaeus

Plate 186b

Stems slender, erect from an ascending base which is perennial by short, creeping stolons, hairy, usually branched or sometimes simple, 10 to 24 inches high. Leaves ovate to ovate-lanceolate, short petioled, entire, undulate or crenate toothed on the margins, 1 to 2½ inches long. Flowers in dense, axillary and terminal capitate clusters about 1 inch in diameter, with setaceous, hairy bracts. Calyx hairy, the two lower teeth somewhat longer than the three upper ones. Corolla purple, pink or white, with a straight tube a little longer than the calyx teeth, two-lipped; upper lip erect; lower lip spreading and three-lobed. Stamens four, two of them projecting out of the flower.

In fields, open woods, thickets and roadsides, Newfoundland to Manitoba, south to North Carolina and Tennessee and in the Rocky mountains. Also in Europe and Asia. Flowering from June to September.

Hoary Mountain Mint; Calamint

Koellia incana (Linnaeus) Kuntze

Plate 182a

Stems rather stout, 1½ to 3½ feet high, finely pubescent or smooth below. Leaves thin, opposite, ovate to ovate-lanceolate, pointed at the apex, sharply toothed, 1½ to 3 inches long, the upper leaves smaller, white-canescent beneath, the upper leaves usually white-canescent on both sides. Flowers in loose terminal and axillary clusters, 1 to 1½ inches broad, canescent. Calyx slightly two-lipped, with very slender somewhat unequal teeth; corolla white with purple dots, about one-half of an inch long, two-lipped, the tube of the corolla equaling or longer than the calyx.

Dry thickets, open woods and hillsides, Maine to Ontario, south to Florida, Alabama and Missouri. Flowering from August to October.

At least six other species of this genus occur in New York, most of them are less conspicuous than the one here described and illustrated.

OSWEGO TEA; AMERICAN BEE BALM

Monarda didyma

A. WILD BERGAMOT
Monarda fistulosa

B. PURPLE BERGAMOT
Monarda media

A. AMERICAN WILD MINT
Mentha canadensis

B. SQUARE-STEMMED MONKEY FLOWER
Mimulus ringens

American Wild Mint

Mentha canadensis Linnaeus

Plate 191a

Stems slender, erect, simple or sometimes branched, more or less hairy or nearly smooth, 6 to 25 inches high, from a perennial root which propagates by suckers. Leaves opposite, oblong to oblong-lanceolate, acute at the apex, or the lower ones blunt, sharply toothed, narrowed at the base into short, slender petioles, smooth or sparingly pubescent, 1 to 3 inches long, one-half to 1 inch wide, and when crushed giving off the odor of Pennyroyal. Whorls of flowers all axillary, often shorter than the petioles. Calyx oblong-campanulate, hairy all over, five-nerved, with five acute, short teeth. Corolla white or slightly pink, about one-eighth of an inch broad, four-lobed, the posterior lobes broader than the others.

Marshes, swamps and moist soil, New Brunswick to British Columbia, south to Virginia and New Mexico. Flowering in summer and often in flower as late as October.

Stoneroot; Richweed; Horse Balm

Collinsonia canadensis Linnaeus

Plate 192

Stems rather stout, erect, more or less branched, 1 to 4 feet high, from a large, thick, hard and woody perennial root, smooth or with some glandular pubescence above. Leaves ovate or ovate-oblong, blunt or sometimes heart-shaped at the base, the upper leaves nearly sessile, the lower ones with slender petioles; blades 4 to 8 inches long, all sharply and coarsely toothed. Flowers lemon-scented, numerous, in several racemes, forming a terminal inflorescence sometimes a foot long. Calyx bell-shaped, ten-nerved, two-lipped; upper lip three-toothed, lower lip with two much longer teeth. Corolla light yellow, about one-half of an inch long, obliquely bell-shaped, five-lobed, four of the lobes nearly equal, the fifth pendent, fringed and larger than the others, appearing like a lower lip; fertile stamens two, long exserted from the flower.

In moist, rich, usually rocky woodlands, Quebec to Wisconsin, south to Florida, Alabama and Arkansas.

Potato Family

Solanaceae

Clammy Ground Cherry

Physalis heterophylla Nees von Esenbeck

Plate 193

Stems erect, becoming decumbent and spreading, 1 to 3 feet high, from a perennial, slender, creeping rootstock, viscid, glandular and hairy with long-spreading, jointed, flat hairs. Leaves alternate, ovate, at least the lower ones usually somewhat heart-shaped, the apex pointed, texture rather thick, the margins sinuate toothed or nearly entire. Calyx hairy, the margin with five-pointed lobes. Corolla three-fourths to seven-eighths of an inch broad, greenish yellow with a purplish or purplish brown center, open bell-shaped, five-lobed; anthers usually yellow. Fruit a small, yellow berry inclosed by the enlarged calyx.

In rich soil, along roads and banks, usually where the soil has been disturbed. Flowering in July and August.

There are three or four additional species of Physalis in New York, all of which are perennial by rootstocks. The Smooth Ground Cherry (Physalis subglabrata Mackenzie & Bush), is easy to identify because it is smooth or nearly smooth with ovate or ovate-lanceolate leaves.

The Virginia Ground Cherry (Physalis virginiana Miller) is not easy to distinguish from the Clammy Ground Cherry, but is usually hairy and little or not at all viscid, the berry reddish, and the fruiting calyx smoother and deeply sunken at the base.

The Jamestown or Jimson Weed (Datura stramonium Linnaeus) (Figure XXVII) is a stout, smooth annual plant, 1 to 5 feet high; large, thin, ovate leaves with irregularly lobed margins; flowers white or violet, 3 to 4 inches long, funnelform, with a five-lobed margin; fruit an ovoid, densely prickly capsule about 2 inches high. Frequent in waste places and fields as a weed, naturalized from tropical regions.

STONEROOT; RICHWEED; HORSE BALM

Collinsonia canadensis

CLAMMY GROUND CHERRY
Physalis heterophylla

Figure XXVII

Stramonium. Jamestown or Jimson Weed. Thorn Apple

(Datura stramonium Linnaeus)

Climbing or Bitter Nightshade; Bittersweet

Solanum dulcamara Linnaeus

Plate 194a

A climbing vine, herbaceous above, usually somewhat woody and perennial below, smooth or pubescent, branching, 2 to 8 feet long. Leaves petioled, ovate or hastate, three-lobed or sometimes entire or only two-lobed, with the terminal lobe much the largest, the margins otherwise entire, 2 to 4 inches long, 1 to $2\frac{1}{2}$ inches wide with a pointed apex. Flowers arranged in compound lateral cymes on slender, drooping stalks. Calyx five-cleft; corolla blue, violet or white, about one-half of an inch broad, rotate, five-lobed, the lobes triangular-lanceolate, slender pointed and curved backward. Stamens five; attached to the throat of the corolla, their filaments short; the anthers long and narrow, united to form a cone. Berry oval or globose, turning from yellow to orange and finally becoming bright red.

In waste places or moist woods and thickets, Nova Scotia to Minnesota and Washington, south to New Jersey, Pennsylvania and Kansas. Native of Europe, but thoroughly naturalized in our eastern states.

The genus Solanum contains a number of cultivated species, weeds and adventive plants. The Black, Deadly or Garden Nightshade (S o l a n u m n i g r u m Linnaeus), with white flowers and black berries, is a common weed almost everywhere. The Sand Brier (S o l a n u m c a r o l i n e n s e Linnaeus) has prickly stems and leaves and smooth, orange-yellow berries. The Sand Bur (S o l a n u m r o s t r a t u m Dunal) has yellow flowers about an inch broad, prickly stems and leaves and the berry inclosed by the prickly, enlarged calyx. The Potato (S o l a n u m t u b e r o s u m Linnaeus) is also a member of this group, while the Tomato is classed in the related genus Lycopersicon.

A. CLIMBING OR BITTER NIGHTSHADE; BITTERSWEET
Solanum dulcamara

B. LONG-LEAVED HOUSTONIA
Houstonia longifolia

Figwort Family

Scrophulariaceae

White Mullen

Verbascum lychnitis Linnaeus

Plate 195a

Stems stout, angled, branched above, 2 to 5 feet high, densely covered, as well as the lower surface of the leaves, with a white pubescence. Leaves oblong, ovate or oblong-lanceolate, the margins crenately toothed, 2 to 8 inches long, the upper leaves sessile and pointed at the apex, the lower leaves blunt or pointed and narrowed at the base into margined petioles. Flowers in large, terminal panicles and racemes on the branches, white or cream-colored, about one-half of an inch broad. Corolla flat, five-lobed, the lobes a little unequal. Stamens five, unequal, the filaments of the three shorter ones with white hairs.

Sandy fields and waste places, Ontario to New Jersey and Pennsylvania. Native of Europe. Flowering from June to September. From a little distance the entire plant appears to be almost white, and when growing abundantly in a field presents a marked appearance. The plant is very common in sandy fields on the south side of Fish creek near where it empties into Oneida lake. It must have been introduced there many years ago, because J. A. Paine, jr (Plants of Oneida County and Vicinity, 1865, page 107) remarks concerning its abundance there.

Moth Mullen

Verbascum blattaria Linnaeus

Plate 195b

Stems erect, stiff, smooth or slightly glandular-pubescent, usually simple but occasionally branched, 2 to 6 feet high. Leaves oblong, ovate or lanceolate, toothed or cut on the margins, sharp pointed at the apex, the upper ones clasping the stem, one-half to $2\frac{1}{2}$ inches long, the basal leaves sessile or petioled, much larger and often several inches long, but

usually dying or withering by the time the flowers open. Flowers yellow or white, two-thirds to 1 inch broad, in a loose, terminal raceme, which is 1 to 2 feet long; corolla usually marked with brown on the back; filaments of the stamens pilose with violet-colored hairs.

In fields and waste places. Common. Naturalized from Europe, as is the Common or Velvet Mullen (Verbascum thapsus Linnaeus) which has yellow flowers in very dense terminal spikes and is densely woolly or velvety all over.

Butter and Eggs; Ramstead

Linaria linaria (Linnaeus) Karsten

Plate 196

A slender-stemmed, herbaceous plant, 1 to 3 feet high from a deep, perennial root, stems erect, with sessile, narrowly linear leaves which are pale green or glaucous, one-half to 1½ inches long, or the lower leaves longer. The stems often several or many together and simple or with a few branches. Flowers in erect, dense, terminal spikes or racemes. Calyx five-parted, the segments overlapping. Corolla about an inch long, spurred at the base, the spur nearly as long as the body of the corolla, the apex of the corolla two-lipped, the upper lip two-lobed and erect, light yellow, lower lip three-lobed and spreading, light yellow with a rounded projection or fold (palate), deep orange in color, which nearly closes the throat of the flower. Stamens four, in pairs and not projecting out of the flower.

In fields and waste places, everywhere common, often a troublesome weed. Naturalized from Europe. Flowering from June to October.

Turtlehead; Snakehead; Balmony

Chelone glabra Linnaeus

Plate 197

Stems slender, smooth, erect and stiff, 1 to 3 feet high from a perennial root, simple or with erect or ascending branches. Leaves opposite, short petioled, linear-lanceolate to ovate-lanceolate, with sharply toothed margins, the principal veins rather prominent. Flowers 1 to 1½ inches long, white or

A. WHITE MULLEN
Verbascum lychnitis

B. MOTH MULLEN
Verbascum blattaria

BUTTER AND EGGS; RAMSTEAD

Linaria linaria

TURTLEHEAD; SNAKEHEAD; BALMONY

Chelone glabra

slightly pinkish, crowded in a dense terminal spike and often a few in the upper axils. Calyx five-parted, segments ovate-oblong, with smooth bracts at the base. Corolla irregular, tubular, inflated and two-lipped; upper lip arched, concave, entire or slightly notched and covering the lower lip while the flower is immature; under lip three-lobed, spreading in maturity and woolly within. Stamens five, only four of which bear anthers, the sterile one smaller. Fruit an ovoid capsule about one-half of an inch high.

In swamps, wet meadows, along streams and in low, wet woods, Newfoundland to Florida, west to Alabama, Kansas and Manitoba. Flowering from July to September.

Hairy Beardtongue

Pentstemon hirsutus (Linnaeus) Willdenow

Plate 198

A slender-stemmed, erect herb, 1 to 3 feet high from a perennial root. Stems downy, puberulent or hairy, usually several from a root. Leaves puberulent or smooth; the pedicels, calyx and corolla pubescent. Leaf blades denticulate, the lower ones oblong or ovate, somewhat obtuse at the apex; petioled, 2 to $4\frac{1}{2}$ inches long, one-half to 2 inches wide; upper leaves smaller, lanceolate, long pointed, sessile or clasping the stem. Flowers borne on short pedicels in a loose thyrse, purplish or violet in color. Calyx five-parted, the lobes overlapping; corolla consisting of an elongated tube about 1 inch long, dilated at the point of separation of the upper and lower lips; upper lip two-lobed; lower lip three-lobed; throat of the tube nearly closed by a hairy palate. Stamens five, four of which are anther-bearing, the fifth sterile and densely bearded for about one-half its length.

Dry woods, thickets and fields, Maine to Ontario and Minnesota, south to Florida, Alabama and Missouri. Flowering in May, June and July.

The Smooth Beardtongue (P e n t s t e m o n p e n t s t e m o n (Linnaeus) Britton (figure XXVIII), P. l a e v i g a t u s Solander) is smooth except the

Figure XXVIII
Smooth Beardtongue
(Pentstemon pentstemon (Linnaeus) Britton)

somewhat glandular inflorescence; the tube of the corolla gradually enlarged above, its throat wide open and scarcely or not at all bearded. Common in woods, thickets and fields; native from Pennsylvania southward.

The Foxglove Beardtongue (Pentstemon digitalis (Sweet) Nuttall), also probably an escape in this part of its range, is similar to the Smooth Beardtongue, but the leaves are somewhat broader and more clasping at the base; the corolla is white and 1 to 1½ inches long, abruptly expanded upward and the throat wide open.

Square-stemmed Monkey Flower

Mimulus ringens Linnaeus

Plate 191b

Stems smooth, four-angled, erect, 1 to 3 feet high from a perennial root. Leaves opposite, oblong to lanceolate in shape, with serrate margins, acute at the apex, sessile or auricled-clasping at the base, 2 to 4 inches long, one-half to 1 inch wide. Flowers violet-purple, borne solitary in the axils of the upper leaves on long, slender stalks. In fruit these stalks become 1 to 2 inches long and two to four times as long as the calyx. The calyx is prismatic, five-angled, with five slender,

HAIRY BEARDTONGUE
Pentstemon hirsutus

pointed teeth. Corolla about 1 inch long, consisting of a cylindrical tube which is longer than the calyx, and an upper and a lower lip; upper lip two-lobed and reflexed, lower lip three-lobed and spreading, the throat of the flower closed by a prominent yellow palate. The plant derives its name from the fancied resemblance of the flower to a grinning face.

In swamps, marshes, wet meadows and along streams from Nova Scotia to Manitoba, south to Virginia, Tennessee, Nebraska and Texas. Flowering from June to September.

Golden Hedge Hyssop; Goldenpert

Gratiola aurea Muhlenberg

Plate 199a

Stems decumbent, creeping, ascending at the ends, simple or usually branched, 4 to 12 inches long, from a perennial root. Leaves lanceolate to linear-oblong, one-half to 1 inch long, sessile and somewhat clasping at the base. Calyx five-parted with narrow lobes. Corolla irregular, its tube cylindric, the end of the flower more or less two-lipped, bright yellow, about one-half of an inch long; upper lip entire, lower lip three-lobed. Stamens four, only two of which bear anthers. Fruit a short, almost globular, capsule.

In sandy, wet places and borders of ponds and marshes in sandy soil, Quebec to Ontario, south to New Jersey and Virginia. Flowering from June to September. Frequent on the sandy, coastal plain. Rather rare and local in the interior parts of the State.

American Brooklime; Speedwell

Veronica americana Schweinitz

Plate 199b

A rather small, smooth herb, with creeping stems and perennial root-stock freely rooting at the nodes, the ends erect, 6 inches to 3 feet long. Leaves opposite and petioled, oblong, ovate or oblong-lanceolate, toothed, 1 to 3 inches long, one-fourth to 1 inch wide. Flowers blue or whitish, striped with purple or blue lines, about one-fifth of an inch broad in loose,

axillary, elongated racemes, each flower subtended by a small, green bract. Calyx four-lobed; corolla rotate and also four-lobed, the lower lobe commonly the narrowest. Stamens two, wide-spreading, attached to the base of the upper lobe of the corolla on either side. Fruit a globose capsule, about one-eighth of an inch high, slightly compressed.

Frequent in brooks, ditches and swamps, Anticosti to Alaska, south to Pennsylvania, Nebraska, New Mexico and California. Flowering from spring until late summer.

There are a number of other Veronicas or Speedwells, many of them small, introduced weeds with inconspicuous flowers. The Marsh or Skullcap Speedwell (Veronica scutellata Linnaeus) has light-blue flowers about the size of those of V. americana, and linear or linear-lanceolate, sessile leaves. The Common Speedwell or Gipsyweed (Veronica officinalis Linnaeus) is hairy all over with oblong, oval or obovate leaves and blue flowers in spikelike racemes from the axils of the upper leaves.

Culver's Root; Bowman's Root; Beaumont's Root

Leptandra virginica (Linnaeus) Nuttall

Plate 200

A tall, stout, erect herb with smooth stems, branched only at the inflorescence, 2 to 7 feet high. Leaves whorled, three to nine leaves at a node or some of the upper ones opposite, lanceolate or oblong-lanceolate, long pointed at the apex, narrowed and short petioled at the base, the margins finely sharp toothed, smooth on both sides, or slightly hairy beneath, 3 to 6 inches long. Flowers small and numerous in dense spikes, 2 to 9 inches long, terminating the stem and branches of the inflorescence. Calyx four-parted with pointed, ovate-lanceolate segments. Corolla tubular, white or bluish, about one-sixth of an inch long, with four nearly equal lobes which are about one-fourth as long as the tube of the corolla. Stamens two, and like the style projecting beyond the flower. Fruit an ovoid-oblong capsule, two to three times as long as the calyx.

In moist woods, thickets and meadows, often along old roads, Ontario to Manitoba, south to Massachusetts, Alabama and Texas. Flowering from late in June until early September.

A. GOLDEN HEDGE HYSSOP; GOLDENPERT
Gratiola aurea

B. AMERICAN BROOKLIME; SPEEDWELL
Veronica americana

CULVER'S ROOT; BOWMAN'S ROOT; BEAUMONT'S ROOT

Leptandra virginica

Fern-leaved False Foxglove; Fever-flower

Aureolaria pedicularia (Linnaeus) Rafinesque

(*Gerardia pedicularia* Linnaeus)

Plate 201

Stems rather slender and much branched, leafy, erect or spreading-ascending, 1 to 4 feet high, glandular-pubescent, viscid and somewhat hairy. Leaves sessile or the lower ones petioled, pinnately divided, ovate or ovate-lanceolate in outline, 1 to 3 inches long, the lobes cut-toothed. Flowers on short stalks from the upper axils of the reduced leaves of the stems and branches. Calyx bell-shaped, with five oblong, toothed lobes, becoming one-third of an inch long in fruit. Corolla slightly irregular, funnelform, 1 to 1½ inches long, hairy without, about 1 inch broad, with five spreading, rounded lobes, dull yellow or slightly brownish yellow in color. Stamens four, not projecting from the flower. Fruit an oblong, hairy capsule about one-half of an inch long.

In dry woods and thickets, Maine to Ontario and Minnesota, south to Florida and Missouri. Flowering in late summer, from the latter part of July to September.

Smooth False Foxglove

Aureolaria glauca (Eddy) Rafinesque

(*Gerardia quercifolia* Pursh; *Gerardia virginica* Britton, Sterns & Poggenberg; Gray's manual, ed. 7, 730, 1908. *Gerardia glauca* Eddy, Med. Repos. N. Y. Rex 2, v. 126. 1808)

Plate 202

Stems rather stout, stiff, smooth and often purplish with a whitish or glaucous bloom, usually branched, 2 to 5 feet high from a perennial root. Leaves usually petioled, ovate or ovate-lanceolate in outline, the lower one to two-pinnatifid, 4 to 6 inches long, the upper ones pinnatifid or deeply incised, the lobes lanceolate or oblong, pointed, entire or toothed, often nearly at right angles to the midvein. Fruiting stalks longer than the calyx; calyx lobes five, ovate or ovate-lanceolate, pointed, entire, about equaling the tube in length. Corolla yellow, 1½ to 2 inches long, smooth

outside, slightly irregular, funnelform, not widely spreading at the mouth, pubescent within, the margin five-lobed. Stamens four, in two pairs. Fruit an oblong, smooth, pointed capsule about twice as long as the calyx.

In dry or moist woods and thickets, Maine to Minnesota, south to Florida and Illinois. Flowering from July to September.

The Downy False Foxglove, Aureolaria virginica (Linnaeus) Pennell, [Aureolaria villosa (Muhlenberg) Rafinesque; Dasystoma pubescens Benthem; D. flava Wood; Rhinanthus virginicus and Gerardia flava Linnaeus] is grayish downy all over with fewer, stiff, erect stems; leaves entire or shallowly toothed or the lower ones somewhat pinnatifid; corolla smooth outside, much expanded at the end; the fruiting capsule pubescent. Common in dry woods and thickets, especially in the southern part of the State.

Large Purple Gerardia

Agalinis purpurea (Linnaeus) Pennell

(*Gerardia purpurea* Linnaeus)

Plate 203

Stems slender or rather stout, branched, annual, smooth or somewhat roughish, 8 to 25 inches high with ascending or spreading branches. Leaves opposite, narrowly linear, 1 to 2 inches long. Flowers purple or rarely white, racemose on the branches, their stalks very short. Calyx bell-shaped with five pointed, triangular-ovate teeth about half the length of the tube. Corolla with a bell-shaped tube and a spreading, five-lobed and slightly two-lipped limb, hairy without and more or less so within. Stamens four, attached to the corolla tube within and not projecting out of the flower. Fruit a globose capsule somewhat longer than the calyx.

In moist fields and meadows, Maine to Florida, most abundant in the coastal region, but also found westward to Wisconsin and Missouri.

Slender Gerardia

Agalinis tenuifolia (Vahl) Rafinesque

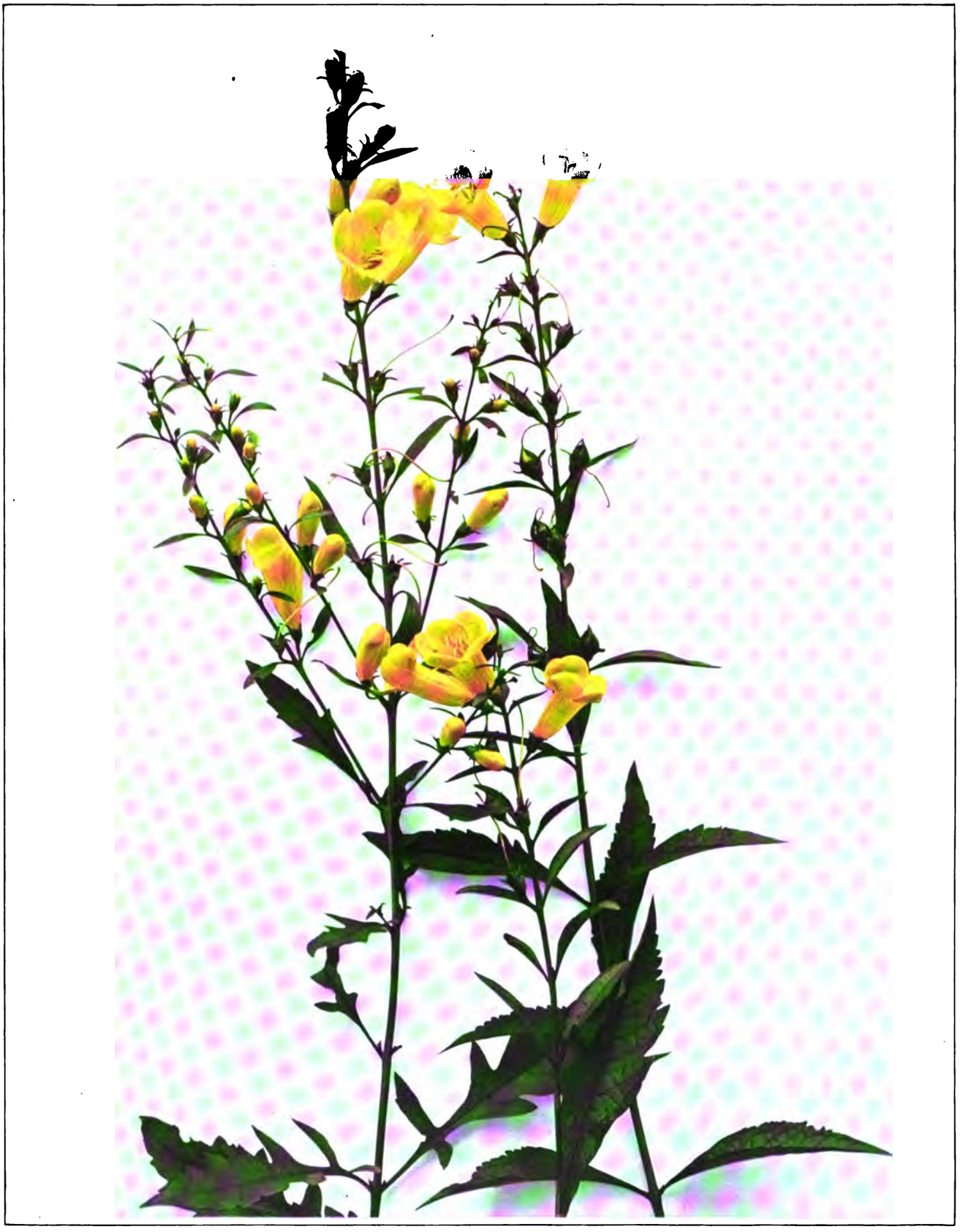
(*Gerardia tenuifolia* Vahl.)

Plate 204

An annual, smooth herb with very slender stems, 6 to 24 inches high, and narrow, flat leaves one-half to $1\frac{1}{4}$ inches long which become blackened

FERN-LEAVED FALSE FOXGLOVE; FEVER-FLOWER

Aureolaria pedicularia



SMOOTH FALSE FOXGLOVE

Aureolaria glauca

in drying. Stem branched, especially above, the branches spreading or ascending. Flowers light purple and spotted, one-half to three-fourths of an inch long, on slender stalks longer than the corollas, from the axils of the upper reduced leaves of the stem and branches; corolla funnelform, vertically flattened and slightly two-lipped, the margin with five rounded lobes, smooth within. Fruit a small globular capsule, one-sixth to one-seventh of an inch in diameter, and longer than the calyx.

In dry woods, thickets and fields, Quebec to Georgia, west to western Ontario, Kansas and Texas. Flowering from August to October.

The Seaside or Salt-marsh Gerardia (A g a l i n i s m a r i t i m a Rafinesque) is rarely over a foot high, smooth and fleshy, with linear leaves and small, purple flowers, one-half to two-thirds of an inch long. Common in salt marshes along the coast. Another species (A g a l i n i s a c u t a Pennell), of sandy fields and depressions of the coastal plain, has stems 1 to 2 feet tall and branched like A . p u r p u r e a , but the flowers are somewhat smaller, light purple or rose-purple, and each of the five lobes of the corolla indented.

Swamp Lousewort

Pedicularis lanceolata Michaux

Plate 206a

Stems rather stout, simple or usually somewhat branched above with ascending branches, smooth, 1 to 3 feet high. Leaves sessile, opposite or some of them alternate, narrowly lanceolate, 2 to 5 inches long, the lower ones deeply lobed, the lobes oblong, blunt, short and crenately toothed, with a thickened margin. Flowers pale yellow, three-fourths to 1 inch long, in short clusters or spikes at the ends of the stems and branches, the flowers subtended by the upper reduced leaves. Calyx two-lobed, the lobes with toothed leaflike margins. Corolla with a slender tube and deeply two-lipped, the upper lip (galea) laterally compressed, arched and terminated by a short, blunt beak, the lower lip three-lobed, erect-ascending, the middle lobe smallest. Stamens four, attached to the inside of the corolla tube and ascending within the upper lip but not projecting out of the flower. Fruit a small, ovate capsule as long as or but slightly longer than the calyx.

In low, wet meadows, swamps and marshes, Ontario to Manitoba and South Dakota, south to Connecticut, North Carolina, Ohio and Nebraska. Flowering from August to September.

Wood or Head Betony; Lousewort

Pedicularis canadensis Linnaeus

Plate 205

Stems usually several together from a perennial root, erect or ascending, 6 to 18 inches high, hairy. Leaves rather thick, oblong-lanceolate, 3 to 5 inches long, at least the lower on slender petioles and divided almost to the midrib into numerous incised or sharply toothed segments, giving the leaf a fernlike appearance. Flowers borne in short, dense, spikes lengthening to 5 or 6 inches in fruit. Calyx oblique, tubular, cleft on the lower side. Corolla yellow, varying to yellowish brown or purplish brown in certain individuals, two-thirds to three-fourths of an inch long, tubular, two-lipped, the upper lip (galea) arched, incurved, minutely two-toothed below the apex, laterally compressed into a hood with the four stamens ascending within it; lower lip erect with three spreading lobes. Fruit an oblique capsule, flattened, lanceolate-oblong or sword-shaped, about two-thirds of an inch long and one-sixth of an inch wide, fully three times the length of the calyx.

In dry woods and thickets, Nova Scotia to Manitoba, south to Florida, Kansas and Colorado. Flowering from April to June.

Narrow-leaved Cowwheat

Melampyrum lineare Lamarck

Plate 165a

A low, slender herb, 6 to 18 inches high; stem slender, puberulent, with opposite, wide-spreading branches. Leaves lanceolate or linear-lanceolate to ovate, opposite on the stem, short petioled, 1 to 1½ inches long, one-eighth to one-half of an inch wide, the lower ones entire, the upper floral leaves mostly toothed with several bristle-pointed teeth at the base.

LARGE PURPLE GERARDIA

Agalinis purpurea

SLENDER GERARDIA

Agalinis tenuifolia

WOOD OR HEAD BETONY; LOUSEWORT

Pedicularis canadensis

Flowers small, one-third to one-half of an inch long, white, greenish white or pale yellow with a rather bright yellow apex to the flower, borne on short stalks in the upper axils of the leaves, or in terminal, leafy-bracted clusters. Calyx bell-shaped with four long, slender teeth. Corolla tubular, enlarging above, two-lipped, the upper lip not lobed, the lower lip three-toothed and spreading. Stamens four in two pairs of unequal length, ascending under the upper lip. Fruit a flat, oblique capsule, about one-third of an inch long with a rather long beak, two to four-seeded.

Common in dry woods and thickets, Nova Scotia to British Columbia, south to Georgia, Tennessee, Iowa and Idaho. Flowering from July to September.

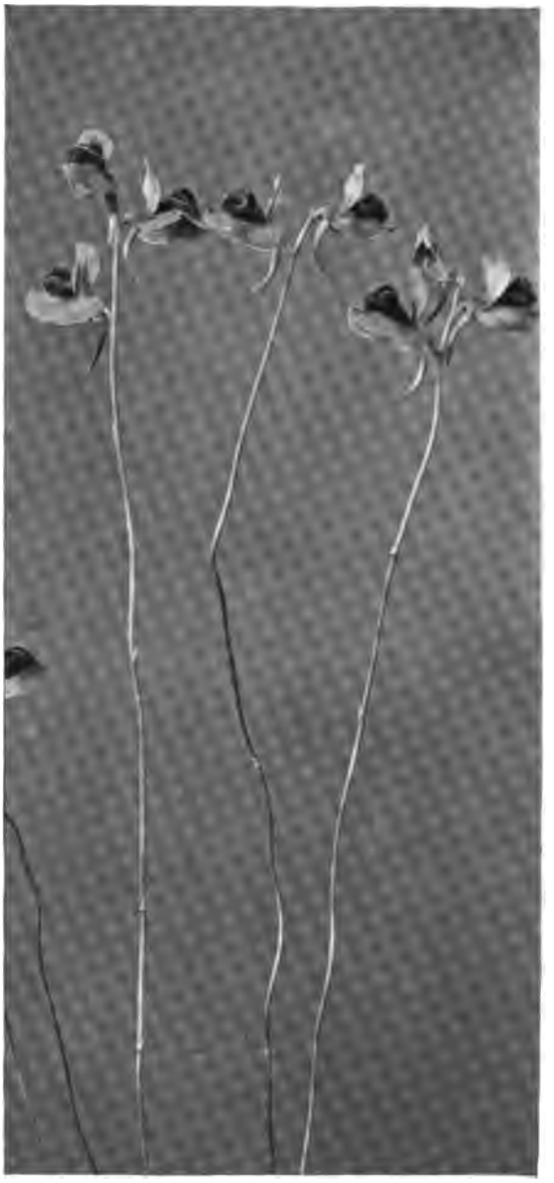


Figure XXIX
Horned Bladderwort
(Stomoisia cornuta (Michaux) Rafinesque)

Bladderwort Family
Lentibulariaceae

The Bladderworts, of which there are at least fourteen species in New York, form a very interesting group of plants. Few of them, however, have conspicuous

flowers. Nearly all of them are aquatic, but two or three are found growing in moist or wet sand.

One of the most conspicuous and beautiful of the Bladderworts is the Horned Bladderwort (Stomoisia cornuta (Michaux) Rafinesque), figure XXIX, frequent in bogs and on sandy shores. Unlike most other species of the group, it possesses only a few inconspicuous and delicate leaves at the base of the scape; the latter, however, is conspicuously brownish, 2 to 13 inches high, bearing one to five bright yellow, fragrant flowers; the lower lip of the flower is nearly two-thirds of an inch long, with a conspicuous hoodlike palate, the spur often one-half of an inch long and pendulous beneath the flower.

In addition to the two species illustrated here, Stomoisia cornuta and Utricularia intermedia, the other species may be identified by means of the following key.

Calyx inclosing the fruit; bracts at the base of the pedicels accompanied by a pair of bractlets; plants terrestrial, rooting in sand beneath shallow water or on wet shores
- Corolla much exceeding the calyx (genus Stomoisia Rafinesque)
  - Lower lip of corolla one-half to two-thirds of an inch long; spur one-fourth to one-half of an inch long.....Stomoisia cornuta
  - Lower lip of corolla one-third of an inch long; spur about one-third of an inch long or less.....Stomoisia juncea
- Corolla shorter than or about equaling the calyx.....Stomoisia virgatula

Calyx not inclosing the fruit; bracts at the base of the pedicels without bractlets
- Lateral lobes of the lower lip of corolla saccate, branches verticillate and verticillately or oppositely decompound; corolla red-purple (genus Vesiculina Rafinesque)..... Vesiculina purpurea
- Lateral lobes of lower lip of corolla not saccate; branches alternate or none
  - Bract solitary, tubular, surrounding the scape; scales none; flowers purple (genus Lecticula Barnhart).....Lecticula resupinata
  - Bracts and scales peltate; plants terrestrial in wet sand (genus Setiscapella Barnhart)
    - Corolla yellow, lower lip conspicuous, one-eighth to one-third of an inch long; spur conic.....Setiscapella subulata
    - Corolla white or purplish, both lips minute; flowers about one-sixteenth of an inch broad or less.....Setiscapella cleistogama

Bracts, and scales if present, flat, usually attached, plants aquatic; flowers yellow (genus Utricularia Linnaeus)

Scape 2 inches long or less with a whorl of more or less united conspicuous floats; corolla one-half to two-thirds of an inch long..... Utricularia radiata

Scapes without floats

Stems free-floating, except for a single point of attachment

Scape two to five-flowered, without scales, cleistogamous flowers also present..... Utricularia geminiscapa

Scape six to twenty-flowered, with one to five scales; cleistogamous flowers none..... Utricularia macrorhiza

Stems creeping on the bottom in shallow water; some or all of the leaves rootlike

Spur a mere sac; palate obsolete; pedicels recurved in fruit..... Utricularia minor

Spur and palate conspicuous; pedicels ascending in fruit

Segements of some leaves linear, flat, bristly-serrulate; upper lip of corolla about one-half the length of the lower lip..... Utricularia intermedia

Segments of leaves all capillary; lips of corolla nearly equal in length

Spur stout, conic, shorter than the lower lip..... Utricularia gibba

Spur slender, equaling or exceeding the lower lip

Spur tapering from base to apex; leaves all alike; bladder-bearing; scapes 2 to 5 inches high..... Utricularia pumila

Spur conic at the base, linear above; leaves not all bladder-bearing; scape 4 to 16 inches high..... Utricularia fibrosa

Flat-leaved Bladderwort

Utricularia intermedia Hayne

Plate 206b

Stems aquatic, rooted in shallow water, the horizontally submerged branches radiating from the base of the scape. Leaves alternate, one-fourth to two-thirds of an inch long, three-forked at the base, the divisions again

two or three times divided into linear, flat, bristly-serrulate segments without bladders. Other branches or portions of branches usually bear shorter, rootlike leaves with capillary segments and a few large bladders. The flower-bearing scape naked or with one to several minute scales, 2 to 8 inches high and bearing one to four flowers on slender pedicels one-fourth to three-fourths of an inch long. Calyx two-lobed. Corolla yellow, strongly two-lipped, the upper lip broadly triangular, about one-third of an inch broad, the lower lip slightly three-lobed and about one-half of an inch broad with a prominent palate on its face. Spur pointed, about as long as the lower lip. In midsummer, when the plant is in flower, the leafy stems produce at their tips numerous conspicuous, obovate, velvety winter buds which afford the chief means of propagation.

Frequent in shallow water of slow streams, ponds and bogs, Newfoundland to British Columbia south to New Jersey, Indiana and California. Flowering in July and August or as late as early September.

The Greater Bladderwort or Hooded Water Milfoil (U t r i c u l a r i a m a c r o r h i z a LeConte) is perhaps the most abundant species of the group throughout most parts of the State. It has free-floating stems horizontally spreading beneath the surface. Leaves finely divided, but not flat, bearing numerous small, conspicuous bladders. Scape stout, 3 to 20 inches high, with four to eighteen flowers, pedicels one-fourth to two-thirds of an inch long, becoming longer and recurved in fruit. Corolla yellow, three-fourths of an inch long, strongly two-lipped, the lower lip a little longer and much broader than the upper and with a spreading, undulate, slightly three-lobed border and a prominent palate; spur shorter than the lower lip, subulate and upwardly curved.

Broom Rape Family

O r o b a n c h a c e a e

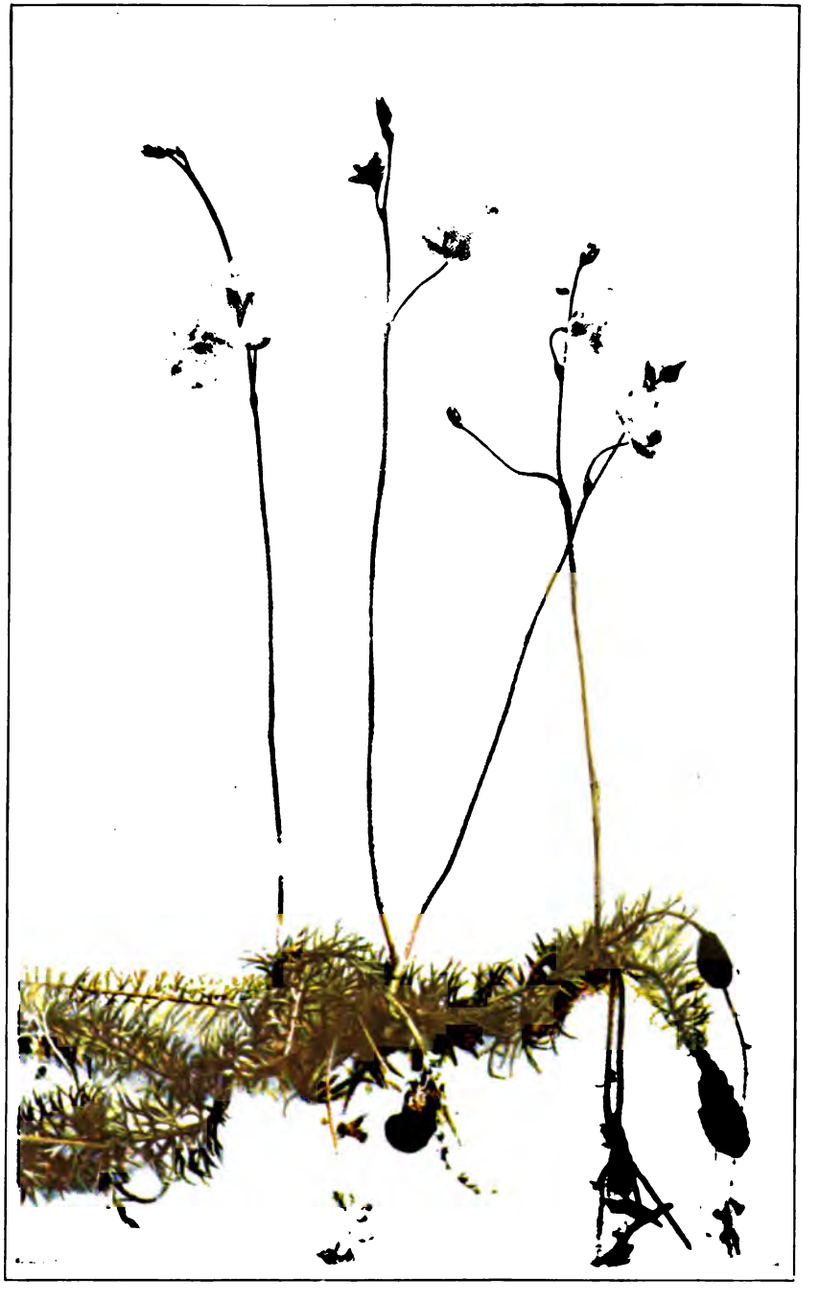
Pale or Naked Broom Rape; Cancer-root

Thalesia uniflora (Linnaeus) Britton

Figure XXX

Stems nearly subterranean, forming a dense mat, often several inches in extent, parasitic upon the roots of various plants, bearing several ovate-oblong scales and one to four slender, erect, glandular-puberulent, naked,

A. SWAMP LOUSEWORT
Pedicularis lanceolata



B. FLAT-LEAVED BLADDERWORT
Utricularia intermedia

Figure XXX
Pale or Naked Broom Rape
(Thalesia uniflora (Linnaeus) Britton)

one-flowered stalks, 3 to 8 inches high. Calyx bell-shaped, pubescent and glandular, about one-third of an inch long, less than half the length of the corolla, with five lanceolate, long-pointed lobes. Corolla white or violet, puberulent without, two-thirds to 1 inch long, oblique, the curved tube about three times the length of the slightly two-lipped limb, which has five short, oval or obovate, blunt lobes. Fruit a small, ovoid capsule. Stamens four, not projecting out of the flower.

In woods and thickets, parasitic upon roots of various herbs, Newfoundland to Ontario and south to South Carolina and Texas. Flowering from May to July.

This and the two following species are the common members in New York State of the Broom Rape family (Orobanchaceae), which consists of a number of parasitic flowering herbs with brown, yellowish, purplish or nearly white stems, and leaves reduced to alternate appressed scales. Because of their parasitic habit they do not require green leaves for the purpose of manufacturing food and hence are devoid of any green coloring matter or real leaves.

Squawroot; Cancer-root

Conopholis americana (Carl von Linné) Wallroth

Figure XXXI

Plants smooth, 3 to 10 inches high, from a thickened base, densely scaly, light brown, usually clustered, covered all over with stiff, overlapping scales. Upper scales lanceolate or ovate, pointed, one-half to 1 inch long, lowest scales much smaller. Flowers yellowish, each with two small bracts beneath the calyx, together forming a thick, dense spike, one-half to 1 inch thick; each flower about one-half of an inch long. Calyx oblique, deeply split on the lower side, three to four-toothed on the upper side. Corolla pale yellow, strongly two-lipped, the tube slightly curved, the upper lip concave, nearly erect and notched, the lower lip spreading, three-lobed and shorter than the upper lip. Stamens projecting from the flower. Fruit an ovoid-globose capsule nearly one-half of an inch long.

In rich woods at the base of trees and parasitic upon their roots, Maine to Ontario and Michigan, south to Florida, Alabama and Tennessee. Flowering from May to August.

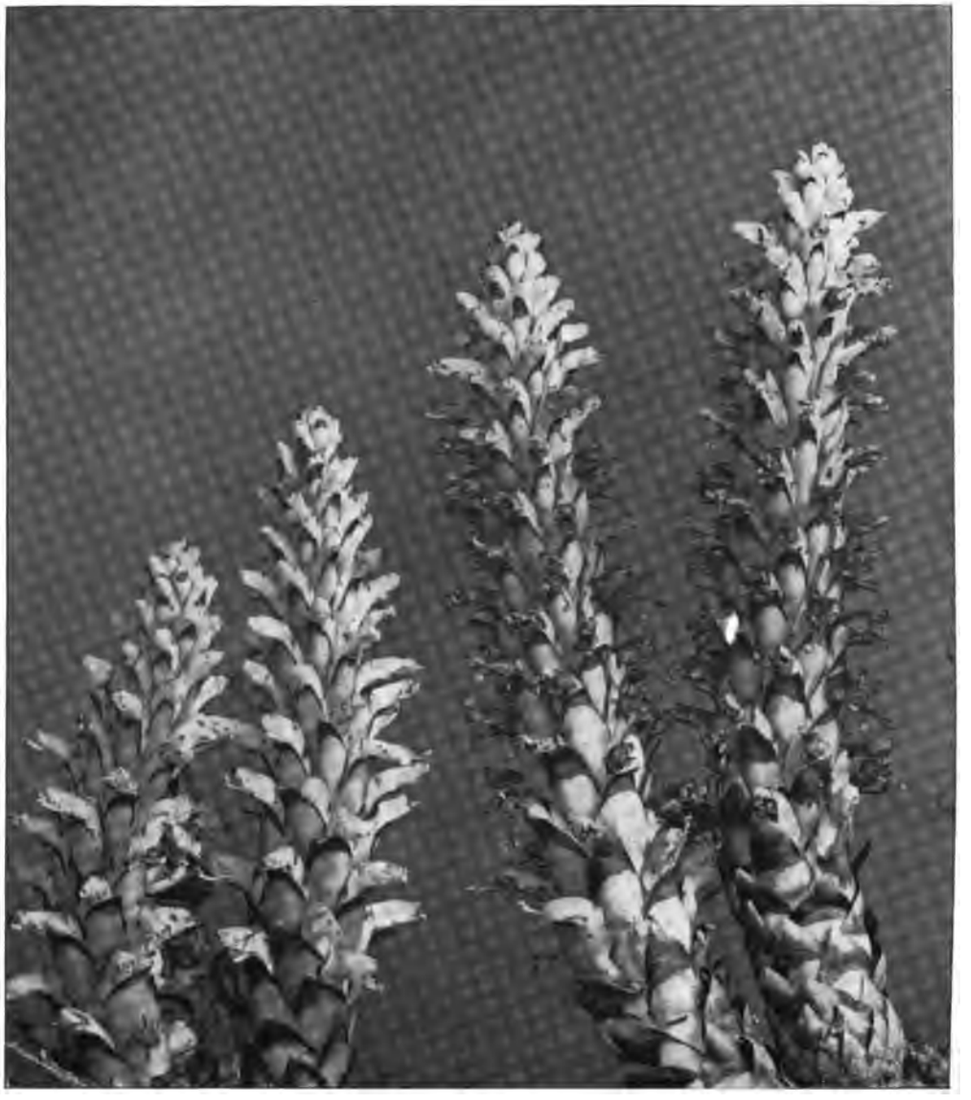


Figure XXXI
Squawroot or Cancer-root
(Conopholis americana (Carl von Linné) Wallroth)

Beechdrops

Leptamnium virginianum (Linnaeus) Rafinesque

Figure XXXII

Stems erect, rather stiff and branching, slender, smooth, yellowish brown or purplish yellow, 6 to 20 inches high from a thick, scaly base, the roots fibrous and brittle; scales few and small. Flowers sessile, of two kinds, distantly spicate on the branches; the lower flowers cleistogamous and abundantly fertile, the upper complete but mostly sterile. Calyx short, nearly equally five-toothed. Corolla of the upper flowers cylindric, slightly flattened laterally, one-third to nearly one-half of an inch long and about one-tenth of an inch thick, the slender tube much longer than the four-lobed limb, upper lobe concave, larger than the three lower lobes. Stamens about as long as the corolla. Lower flowers small, about one-eighth of an inch long, not unfolding, borne at the summit of the ovoid ovary and resembling the hood of a moss capsule. Fruit a small capsule about one-fourth of an inch high.

In woods, parasitic upon the roots of the beech, Nova Scotia to Ontario and Michigan, south to Florida, Louisiana and Missouri. Flowering from August to October.

Acanthus Family

Acanthaceae

Water Willow

Dianthera americana Linnaeus

Plate 207

Stems erect, grooved and angled, 1 to 4 feet high, slender and usually simple or slightly branched above, smooth. Leaves narrowly lanceolate, 3 to 8 inches long, one-fourth to 1 inch wide, entire, sessile or short petioled. Flowers violet or nearly white, in dense, short spikes or heads at the ends of the slender axillary peduncles which are shorter than or equal to the leaves in length; bractlets under the flowers linear-subulate and shorter than the flowers. Calyx deeply four to five-parted. Corolla two-lipped,

WATER WILLOW

Dianthera americana

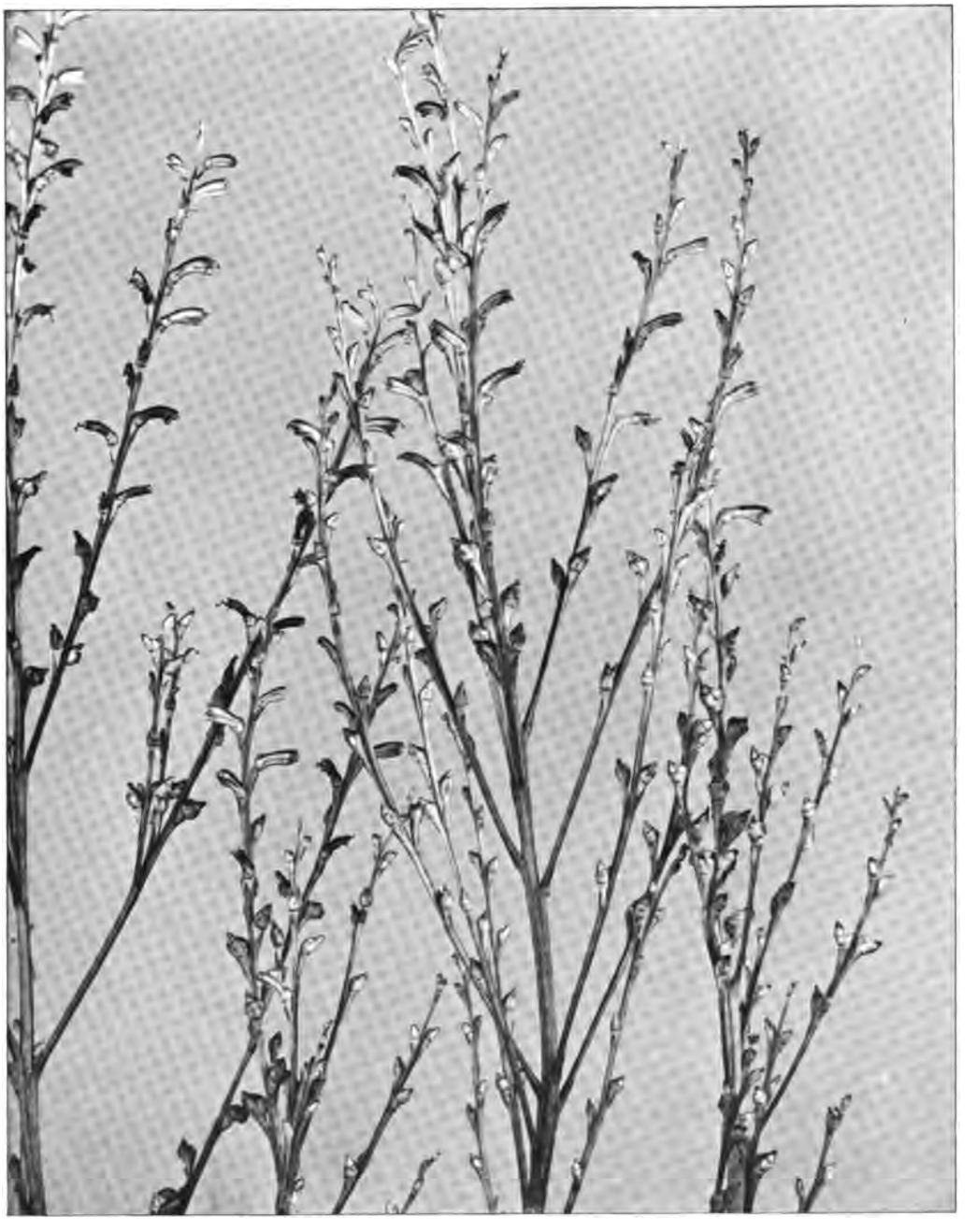


Figure XXXII
Beechdrops
(Leptamnium virginianum (Linnaeus) Rafinesque)

about one-half of an inch long, the tube shorter than the lip, the upper lip erect, concave, entire; lower lip spreading and three-cleft, the base of the lower lip rough and palatelike. Fruit a capsule about one-half of an inch long, slightly compressed below.

In wet places and shallow water along lakes, rivers and ponds, Quebec to Michigan, south to Georgia and Texas. Flowering from May to August. Usually growing in dense colonies and from a distance easily mistaken for a coarse sort of grass. Very abundant along the Seneca river and along the shores of Oneida lake.

Lopseed Family

Phrymaceae

Lopseed

Phryma leptostachya Linnaeus

Plate 208

A rather slender, perennial herb with erect, puberulent, somewhat four-angled stem, branched above, 1 to 3 feet high, the branches slender and opposite. Leaves opposite, thin, ovate, pointed at the apex, coarsely toothed, the lower ones long petioled, the upper ones short petioled or sessile, 2 to 5 inches long. Flowers small, about one-fourth of an inch long, in narrow spikes terminating the stem and branches, usually the flowers opposite each other. Calyx cylindrical, two-lipped, the upper lip cleft into three long bristle or hairlike teeth, the lower lip divided into two short, slender teeth. Corolla tube cylindrical, two-lipped, pinkish purple, the upper lip erect, concave and notched, the lower lip larger and divided into three spreading, convex and blunt lobes. Stamens four, included within the tube of the corolla. Flowers erect at first, soon becoming at right angles to the stem when in full bloom and later as the fruit matures becoming abruptly deflexed against the axis of the stem, whence the name " lopseed."

In woods and thickets, New Brunswick to Manitoba, south to Florida and Kansas; also in Bermuda and eastern Asia. Flowering from June to August.

LOPSEED

Phryma leptostachya

Madder Family

Rubiaceae

Bluets; Innocence; Eyebright

Houstonia coerulea Linnaeus

Plate 209b

Stems erect or nearly so, smooth, perennial by slender rootstocks and forming dense tufts. Lower and basal leaves spatulate or oblanceolate, about one-half of an inch long or less, sometimes slightly hairy, narrowed into petioles. Flowers solitary on very slender terminal and axillary stalks. Corolla one-fourth to one-third of an inch long, and as broad or broader when expanded, the tube pale yellow and slightly enlarged above, the limb of the corolla nearly flat when expanded with four oblong or elliptic, slightly pointed lobes, light blue or violet in color, the throat of the corolla yellow, surrounded by a narrow white band. Calyx deeply four-parted with oblong, blunt lobes, the lobes separated from one another by about their width. Fruit a small capsule about one-sixth of an inch broad and broader than long, compressed and divided or deeply notched at the summit, shorter than the calyx.

In open grassy places, on wet rocks or in open, rocky woods, Nova Scotia to Quebec, New York and Michigan, south to Georgia, Alabama, Tennessee and Missouri. It is inclined to be somewhat local in distribution, but when found is apt to be present in great abundance. Flowering from April to July, usually at its best in New York during the latter part of May, and usually producing a few flowers through the summer.

Long-leaved Houstonia

Houstonia longifolia Gaertner

Plate 194b

A small, low, tufted perennial, smooth or somewhat pubescent, 5 to 10 inches high. Basal leaves spatulate or oblanceolate, blunt and short petioled, but not ciliate. Stem leaves opposite, linear-oblong, usually

pointed at the apex and one-nerved, one-half to 1 inch long. Flowers pale purple, pinkish or nearly white, in corymbed, cymose clusters. Calyx with five very slender lobes. Corolla about one-fourth of an inch long, with five pointed lobes which, when expanded, are somewhat more than one-eighth of an inch across, each lobe about one-third the length of the corolla tube. Fruit a small, globular capsule.

In dry, open or rocky places, Maine to Saskatchewan, south to Georgia and Missouri. Flowering from June to September.

The Fringed Houstonia (Houstonia ciliolata Torrey) is similar but the margins of the leaves are conspicuously ciliate.

Buttonbush; Bush Globeflower

Cephalanthus occidentalis Linnaeus

Plate 210

A shrub, 3 to 10 feet high, rarely treelike and taller; branches smooth or somewhat pubescent. Leaves opposite or in whorls, petioled, entire, oval or ovate, pointed at the apex, rounded or narrowed at the base, 3 to 6 inches long, 1 to $2\frac{1}{2}$ inches wide. Flowers small, white, sessile, borne in dense terminal or axillary and stalked globose heads, about 1 inch in diameter. Corolla one-third to one-half of an inch long, tubular-funnelform, with four erect or spreading lobes. Stamens four, attached to the throat of the corolla with very short filaments. Style very slender and about twice the length of the corolla.

In swamps, low ground and shallow water along lakes, streams and ponds, New Brunswick to western Ontario and Wisconsin, south to Florida, Texas, Arizona and California. Flowering from June to September.

Partridge Berry; Twinberry; Squawberry

Mitchella repens Linnaeus

Plate 211b

A small, creeping, evergreen herb, with slender, trailing stems, freely rooting at the nodes, 6 to 15 inches long, with numerous branches. Leaves

A. NORTHERN BEDSTRAW
Galium boreale

B. BLUETS; INNOCENCE; EYEBRIGHT
Houstonia coerulea

BUTTONBUSH; BUSH GLOBEFLOWER

Cephalanthus occidentalis

dark green, opposite, short petioled, ovate-orbicular, blunt at the apex, usually somewhat heart-shaped at the base, one-fourth to seven-eighths of an inch long. Flowers white, waxy, fragrant, borne in pairs united at the base. Corolla funnelform, about one-half of an inch long with four recurved or spreading lobes, densely bearded on the inner side. Stamens as many as the lobes of the corolla and attached to its throat, the anthers protruding from the flower. The slender style with its four threadlike stigmas long exserted, in which case the stamens are not exserted, or vice versa, the stamens may be exserted, in which case the style is shorter than the corolla. Fruit composed of two united drupes usually containing eight roundish nutlets; when ripe the fruit is red, broader than high, one-sixth to one-third of an inch in diameter, persistent through the winter and edible.

In woods, Nova Scotia to western Ontario, Minnesota and Arkansas, south to Florida and Texas. Flowering in spring, from April to June and sometimes flowering a second time in the autumn. Sometimes the leaves are whitish-veined.

Rough Bedstraw

Galium asprellum Michaux

Plate 212a

A weak, perennial herb, much branched and usually reclining on bushes or surrounding vegetation, sometimes erect; stems retrorsely hispid on the angles, 2 to 6 feet long. Leaves in whorls of sixes or fives, or those of the branches rarely in fours, narrowly oval or slightly oblanceolate, sharply pointed at the apex, narrowed at the base, and sometimes appearing petioled, one-third to three-fourths of an inch long, one-twelfth to one-sixth of an inch wide, the margins and midrib rough. Flowers white, arranged in many-flowered cymes, which are terminal and axillary. Stalks or peduncles bearing the flowers short and two to three times forked. Corolla four-lobed. Fruit smooth and about one-twelfth of an inch broad.

In moist soil, Newfoundland to western Ontario and Wisconsin, south to North Carolina, Illinois and Nebraska. Flowering from June to August.

Northern Bedstraw

Galium boreale Linnaeus

Plate 209a

Stems erect, smooth, rather stiff, sharply angled, simple or branched, 1 to 2½ feet high, usually a few or several stems from a perennial root. Leaves in fours, lanceolate or linear, entire, conspicuously three-nerved, blunt or pointed at the apex, sometimes the margins ciliate, 1 to 2½ inches long, one-twelfth to one-fourth of an inch wide. Flowers white, panicled in small, compact cymes, forming a terminal inflorescence often 3 to 6 inches long. Corolla four-lobed. Fruit hispid when young, sometimes becoming almost smooth when mature, about one-twelfth of an inch broad.

In rocky soil or along streams and lake shores, Quebec to Alaska, south to New Jersey, Pennsylvania, Michigan, Missouri, New Mexico and California. Also found in Europe and northern Asia. Flowering from May to August.

There are about seventeen species of Bedstraw (Galium) found in New York, most of them with small, inconspicuous flowers, some of them introduced species. The Yellow Bedstraw (Galium verum Linnaeus) with yellow flowers, is native of Europe, but frequent as a naturalized plant in many localities.

Honeysuckle Family

Caprifoliaceae

Twinflower; Deer Vine

Linnaea americana Forbes

Plate 213a

A creeping and trailing, slender, vinelike plant, with scarcely woody, perennial stems, 6 to 24 inches long, slightly pubescent. Leaf blades evergreen, opposite, rounded or obovate, obscurely crenate on the margins, one-fourth to three-fourths of an inch wide and rather thick in texture on petioles one-twelfth to one-sixth of an inch long. Flowers fragrant, pink, borne in pairs at the summit of elongated terminal stalks. Calyx five-lobed. Corolla funnelform, nodding, one-third to one-half of an inch long and five-

A. PEARLY EVERLASTING; MOONSHINE
Anaphalis margaritacea

B. PARTRIDGE BERRY; TWINBERRY; SQUAWBERRY
Mitchella repens

A. ROUGH BEDSTRAW
Galium asprellum

B. BUSH HONEYSUCKLE
Diervilla diervilla

A. TWINFLOWER; DEER VINE
Linnaea americana

B. BEACH CLOTBUR
Xanthium echinatum

lobed at the end. Stamens four, attached at the base of the corolla tube within. Ovary three-celled, two of the cavities filled with abortive ovules, the other with one perfect, pendulous ovule. Fruit a nearly globose, three-celled capsule, two of the cells empty, the other with a single, oblong seed.

In cold woods throughout the north, common in the Adirondack and Catskill mountains, otherwise rather local, ranging south to Maryland, west to the mountains of Colorado, California, British America, and eastward to Newfoundland. Flowering from June to August.

Trumpet or Coral Honeysuckle

Lonicera sempervirens Linnaeus

Plate 214a

A slender, high-climbing vine with glabrous or somewhat hairy stems and foliage. Leaves oval, the uppermost usually united around the stem, the lower ones smaller, narrower and somewhat pointed at the apex, all conspicuously glaucous and often pubescent beneath, dark green above. Flowers numerous in two or three verticillate clusters, close together at the ends of the stems. Corolla scarlet or yellow, 1½ to 2 inches long, slightly expanded upward, the stamens and style scarcely or but slightly protruding from the flower. Fruit a cluster of scarlet berries which are ripe in late autumn.

In thickets and open woods along streams and low ground, common in the south from Florida to Texas and northward to Nebraska, less abundant in its northeastern range which extends to New York and Maine. In New York State known only from a few localities in the southeastern part of the State, but frequently seen in cultivation farther northward, except in the extreme northern part of the State where it is not hardy. It is usually found in flower from May or June until autumn because of the growth of new lateral shoots bearing flowers.

Swamp Fly Honeysuckle

Lonicera oblongifolia (Goldie) Hooker

Plate 214b

An erect, branching shrub, 2 to 8 feet high, the branches and twigs with opposite, elliptical or elliptical-oblong leaves, rather thick and firm when mature, glaucous and reticulate-veined, smooth when mature, downy-pubescent, but not ciliate when young. Flowers in pairs on axillary stalks which are as long or longer than the flowers. Corolla strongly two-lipped, yellowish or purplish within, three-fourths of an inch long, tube of the corolla enlarged on one side at the base. Stamens five, attached to the tube of the corolla within. Fruit consisting of two fleshy, bright-red berries at the summit of each peduncle, remaining distinct or more or less grown together.

In bogs and swamps, New Brunswick to Manitoba, south to Pennsylvania, Michigan and Minnesota. Flowering in May and June.

The Early Fly Honeysuckle (L o n i c e r a c a n a d e n s i s Marshall), of moist and rich rocky woodlands, has thin, green, ciliate leaves and yellow or greenish yellow flowers, appearing with the leaves in April or early May. It is also a small shrub, 2 to 5 feet high.

The Blue or Mountain Fly Honeysuckle (L o n i c e r a c a e r u l e a Linnaeus) (figure XXXIII) occurs in swamps and low grounds, chiefly in the Adirondacks. It is a small shrub with oval or obovate, blunt leaves and small, yellow flowers. The fruit is a bluish black, two-eyed berry.

The Hairy Honeysuckle (L o n i c e r a h i r s u t a Eaton) is a twining and climbing vine several feet long with the foliage and new stems hairy, the upper leaves united around the stem, flowers 1 to 1½ inches long, orange-yellow turning reddish.

The Smooth-leaved or Glaucous Honeysuckle (L o n i c e r a d i o i c a Linnaeus) (figure XXXIV) of rocky woodlands and sometimes in swamps, is smooth throughout, twining or climbing, the upper leaves united around the stem, all of them whitish or glaucous beneath, flowers small, yellowish green tinged with purple, fruit bright-red.

A. TRUMPET OR CORAL HONEYSUCKLE
Lonicera sempervirens

B. SWAMP FLY HONEYSUCKLE
Lonicera oblongifolia

Figure XXXIII

Blue or Mountain Fly Honeysuckle

(Lonicera caerulea Linnaeus)

Bush Honeysuckle

Diervilla diervilla (Linnaeus) MacMillan

Plate 212b

A low shrub with opposite leaves and branches, 1 to 4 feet high, smooth or nearly so. Leaves ovate or oval, long pointed at the apex, usually rounded at the base, 2 to 5 inches long, irregularly crenulate and often slightly ciliate on the margins; petioles very short. Flowers in clusters of one to six on slender stalks which are terminal or in the axils of the upper leaves. Each flower about three-fourths of an inch long, narrowly funnelform, the tube with a slight sac at the base, the limb nearly regular, five-lobed, yellowish and more or less pubescent within and without, usually three of the lobes somewhat united. Calyx with five very slender lobes. Stamens five. Fruit a linear-oblong, smooth capsule, with a slender beak, tipped with the persistent calyx lobes.

In dry, sandy or rocky woods, fields and roadsides, Newfoundland to Manitoba, south to North Carolina, Michigan and Wisconsin.

Teasel Family

Dipsacaceae

Common or Card Teasel

Dipsacus sylvestris Hudson

Plate 215a

A bristly, prickly, coarse biennial, tall and stout, 3 to 6 feet high. The stem, branches, peduncles, midribs of the leaves and the involucre all bear many short prickles. Leaves sessile, lanceolate or oblong, often 1 foot long. Flowers lilac-colored in dense, cylindrical heads which are 3 to 5 inches long, made up of long, spiny bracts in the axils of which are borne the flowers, which usually are exceeded in length by the spiny bracts. The lower flowers open first and appear as a violet or bluish ring of bloom around the spiny head, the ring of flowers gradually spreading upward.

In waste places, old fields and roadsides, Maine to Ontario and

A. WILD OR COMMON TEASEL; CARD TEASEL
Dipsacus sylvestris

B. CREEPING OR EUROPEAN BELLFLOWER
Campanula rapunculoides

Figure XXXIV
Smooth-leaved or Glaucous Honeysuckle
(Lonicera dioica Linnaeus)

Michigan, south to North Carolina. Native of Europe, and established as a weed in many localities.

Gourd Family

Cucurbitaceae

One-seeded Bur Cucumber; Star Cucumber

Sicyos angulatus Linnaeus

Plate 216

An annual, succulent, herbaceous vine, climbing by means of branched tendrils; stem angled, clammy-hairy, often climbing or trailing a distance of 15 to 25 feet. Leaves broad, nearly orbicular, of thin texture, but roughened on both surfaces, heart-shaped at the base and five-angled or five-lobed, the lobes sharp pointed, but the sinuses between the lobes usually not very deep. Petioles stout, 1 to 4 inches long. Flowers small, greenish white, of two kinds, staminate and pistillate. The staminate flowers arranged in loose racemes on very long stalks, with a five-toothed cup-shaped calyx tube, a five-parted rotate corolla and three stamens with their filaments united to form a short column, their anthers coherent. The pistillate or fertile flowers are arranged several together in capitate clusters, on short stalks, also with a five-parted calyx and corolla. Fruit a one-seeded, indehiscent burlike pod, dry when mature, armed with slender, rough spines, sessile in clusters of three to ten, each " cucumber " about one-half of an inch long.

In moist soil, chiefly along streams and rivers or in thickets and low woods, Quebec to Ontario and South Dakota, south to Florida, Texas and Kansas. Flowering from June to September.

Wild Balsam Apple; Wild Cucumber

Micrampelis lobata (Michaux) Greene

Plate 217 and Figure XXXV

An herbaceous, annual vine, climbing and twining, several feet long, sometimes confused with the One-seeded Bur Cucumber. Stems angular and grooved, nearly glabrous and not clammy-hairy, but sometimes hairy at

ONE-SEEDED BUR CUCUMBER; STAR CUCUMBER

Sicyos angulatus

Figure XXXV

Wild Balsam Apple; Wild Cucumber

(Micrampelis lobata (Michaux) Greene)

the nodes. Leaves thin, roughish on both sides, heart-shaped at the base, with five (varying from three to seven) triangular-lanceolate, sharp-pointed lobes with deep sinuses between them. Flowers greenish white, the staminate flowers in narrow, compound racemes; the pistillate flowers solitary or sometimes two together; lobes of the corolla five to six, narrow and sharp pointed. Fruit a small, fleshy pod (pepo), dry when mature, armed with slender spines; inner part fibrous-netted, usually two-celled with two flat seeds in each cavity; ovoid in shape, 1½ to 2 inches long, green, and opening at the apex when mature.

In rich, moist or wet soil in thickets or woods along streams or rivers, New Brunswick to Ontario, Manitoba, Montana, south to Virginia, Kentucky, Texas and Kansas. Flowering from July to September. Frequent in cultivation and perhaps largely introduced or escaped in the northeast.

Bellflower Family

Campanulaceae

Harebell; Bluebells of Scotland

Campanula rotundifolia Linnaeus

Plate 218

A slender, graceful, wiry-stemmed herb, perennial by slender rootstocks, usually smooth, sometimes pubescent. Stems erect or decumbent, often several from the same root, 6 inches to 3 feet high. Basal leaves nearly orbicular, usually heart-shaped at the base, one-fourth to 1 inch wide, toothed or entire, on long, slender, weak petioles, usually withering or dying before the flowers open, but new ones developing in late summer. Stem leaves slender, linear or linear-lanceolate, 1 to 3 inches long. Flowers usually racemose, rarely solitary, at the apex of the stem, drooping on slender, hairlike stalks. Calyx with five threadlike spreading lobes. Corolla bright blue or violet-blue, bell-shaped, one-half to nearly 1 inch broad, the margin with five pointed lobes. Fruit an ovoid capsule, ribbed and opening by short clefts near the base.

In fissures and cracks of rocks near waterfalls and in rocky woods,

WILD BALSAM APPLE; WILD CUCUMBER

Micrampelis lobata

HAREBELL; BLUEBELLS OF SCOTLAND

Campanula rotundifolia

sometimes in meadows and sandy fields. Exhibiting in its varying habitats marked differences in growth and appearance. Labrador to Alaska, south to New Jersey, Pennsylvania, Illinois, Nebraska and in the Rocky mountains to Arizona, in the Sierra Nevada to California and also in Europe and Asia. Flowering from June to September.

Creeping or European Bellflower

Campanula rapunculoides Linnaeus

Plate 215b

A perennial herb with slender rootstocks and smooth or pubescent stems, usually not branched, leafy, erect and rather stout, 1 to 3 feet high, the base of the stem decumbent and freely rooting at the nodes. Lower leaves 3 to 6 inches long, 1 to 2 inches wide, ovate with heart-shaped base, pointed or acuminate, the margin crenately toothed, often the blade slightly pubescent; upper leaves similar but smaller and sessile. Flowers borne in long, one-sided racemes, the individual flowers about 1 or 1½ inches long, drooping on short stalks, subtended by small, leafy bracts. Corolla bell-shaped, blue or violet, five-lobed. Calyx lobes five in number, linear and spreading. Fruit a nodding, globose capsule, about one-third of an inch in diameter, opening by pores at the base.

In fields and along roadsides, and as an escape from gardens, often along fences and village streets. Naturalized from Europe. New Brunswick to Ontario, southern New York, Pennsylvania and Ohio. Flowering from July to September.

The Nettle-leaved Bellflower or Throatwort (Campanula trachelium Linnaeus) is similar in appearance, but the calyx and outer surface of the unexpanded corolla is bristly-ciliate with long, pale hairs. Called also Canterbury Bells.

The Tall Bellflower (Campanula americana Linnaeus) is a native species, not common in eastern or southern New York. Its flowers are pale blue, the corolla wheel-shaped, deeply cleft into five-pointed lobes.

Marsh or Bedstraw Bellflower

Campanula aparinoides Pursh

Plate 219a

A perennial herb with very slender, weak stems, reclining or diffusely spreading, rough with short, retrorse bristles, leafy and paniculately branched, 6 inches to 3 feet long. Leaves lanceolate or linear-lanceolate, sessile, rough on the margins and midrib, pointed at both ends, one-half to 1½ inches long and not more than one-fourth of an inch wide. Flowers white or very faintly tinged with blue, on threadlike stalks chiefly terminating the widely divergent leafy branches; buds nodding. Calyx lobes triangular, half the length of the deeply five-cleft, bell-shaped corolla which is about one-third of an inch long; style not projecting beyond the corolla. Fruit a small, nearly globose, erect capsule, opening at maturity near the base.

In grassy swamps and marshes, from Maine to Georgia, west to Colorado and Kentucky. Flowering from June to August. In habit it resembles some of the Bedstraws (Galium).

The Blue Marsh Bellflower (C a m p a n u l a u l i g i n o s a Rydberg) is similar; flowers blue with darker veins, cleft into lanceolate lobes.

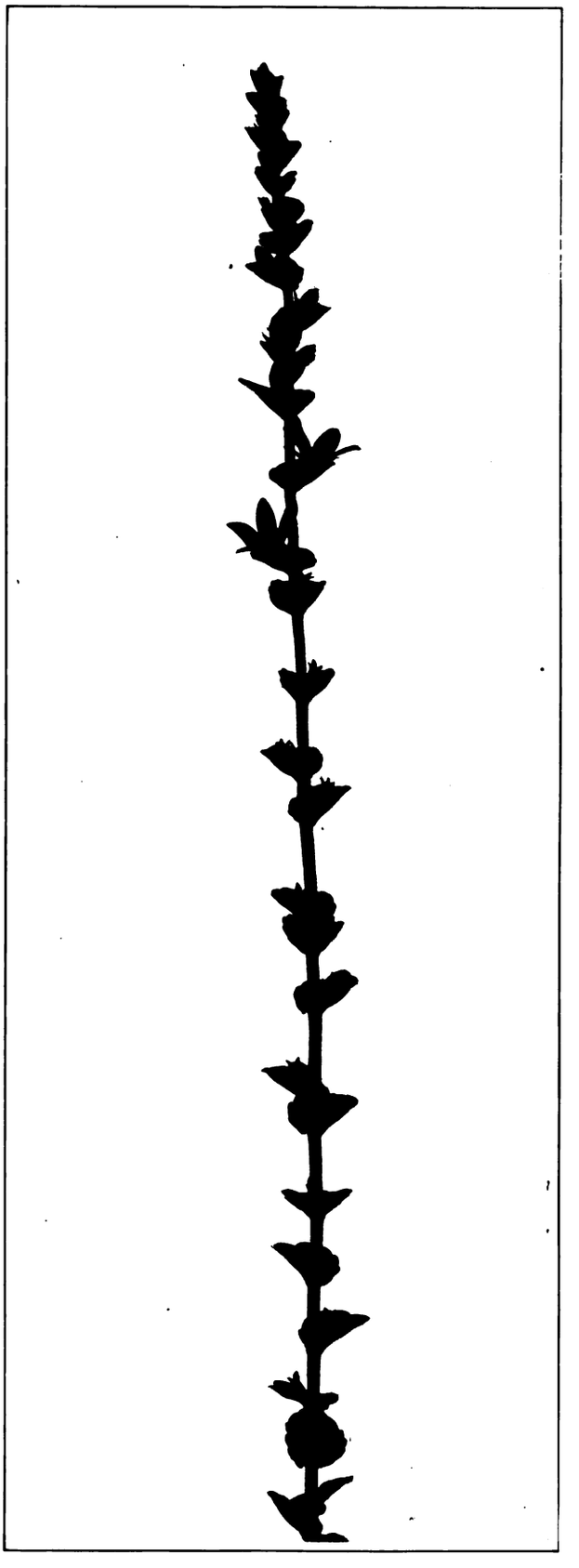
Venus's Looking-glass

Specularia perfoliata (Linnaeus) A. DeCandolle

Plate 219b

Stems weak, decumbent and branched at the base, the ends slender, erect, very leafy, 6 inches to 2 feet tall, angled and hairy on the angles. Leaves rounded, one-fourth to 1 inch broad, clasping the stem by a broad, heart-shaped base, pointed or blunt, about as long as broad. Flowers violet-blue or rarely white, borne solitary or two or three together, sessile in the axils of the leaves; corolla wheel-shaped, those in the axils of the upper leaves with five triangular-lanceolate, long-pointed, rigid calyx lobes and a five-lobed, deeply cleft corolla, one-half to three-fourths of an inch broad, those in the axils of the lower leaves with a shorter, three or four-lobed

A. MARSH OR BEDSTRAW BELLFLOWER
Campanula aparinoides



B. VENUS'S LOOKING-GLASS
Specularia perfoliata

calyx, longer than the rudimentary corolla. Fruit an oblong capsule, one-sixth to one-fourth of an inch long, opening at maturity at about the middle.

In dry woods and dry soil, especially sandy fields and waste places, Maine and Ontario to British Columbia south to Florida, Louisiana, Mexico, Arizona and Oregon. Also in the mountains of Jamaica and Santo Domingo. Flowering in New York from May to September.

Lobelia Family

Lobeliaceae

Cardinal Flower; Red Lobelia

Lobelia cardinalis Linnaeus

Plate 220

A tall, stiffly erect herb, 1½ to 4 feet high with smooth stems from a perennial root, rarely branched, leafy, bearing an elongated, rather one-sided raceme or spike of several or many bright-red flowers, subtended by leaflike bracts. Leaves thin, somewhat toothed, oblong-lanceolate, 2 to 6 inches long, one-fourth to 1½ inches wide, pointed at both ends, and alternate on the stem, the upper leaves becoming successively smaller. Flowers with a five-cleft calyx; corolla five-lobed, about 1 inch long, two-lipped, the lower lip conspicuously cleft into three prominent, spreading lobes, upper lip erect with two small lobes. Stamens five, free from the corolla and united by their anthers to form a tube around the style, two of the anthers possessing hairy tufts at the summit; stigma two-lobed. Fruit a two-celled, many-seeded pod, opening at the top.

Low or wet ground in meadows, swamps and marshes, or in wet grassy places along streams or ditches. New Brunswick to Ontario, south to Florida and Texas, west to Kansas and Colorado. Flowering from July to September.

Great or Blue Lobelia

Lobelia syphilitica Linnaeus

Plate 221

A tall, stiffly erect herb, perennial by short offsets at the base; stem 1 to 3 feet high, stout, leafy, simple, slightly hairy, bearing a long, many-

flowered raceme of bright-blue flowers, each flower subtended by a leafy bract. Leaves smooth or sparingly pubescent, 2 to 6 inches long, one-half to 2 inches wide, long pointed at the apex, narrowed at the base, the lower leaves petioled, the upper sessile, irregularly toothed and alternate. Calyx hairy, with five long, narrow, pointed lobes with large appendages between the lobes. Corolla about 1 inch long, blue fading to pale blue, marked with white on the lobes of the lower lip; upper lip of the corolla two-lobed and erect, the lobes nearly as large as the three lobes of the lower lip. The flowers are rarely entirely white.

In moist or wet soil, along streams, in wet thickets and marshes, Maine to Ontario and South Dakota, south to Georgia, Louisiana, Kansas and Colorado. Flowering from July to October.

Indian or Wild Tobacco; Eyebright

Lobelia inflata Linnaeus

Plate 222a

An acrid, poisonous herb, 1 to 3 feet high; stem hairy and leafy, paniculately branched, from an annual root. Leaves ovate or oblong, bluntly toothed, alternate, the upper sessile and pointed, the lower petioled and blunt, 1 to $2\frac{1}{2}$ inches long, rather thin and pubescent. Flowers small, pale blue or violet, arranged rather loosely in spikelike, leafy racemes, each flower subtended by a leaflike bract, the lower bracts longer than the flowers. Calyx tube greatly inflated in fruit forming a rounded, ribbed capsule containing many seeds. In structure the corolla is similar to the other species of Lobelia, but much less conspicuous.

In dry fields and thickets, often in poor soil, Labrador to Saskatchewan, south to Georgia, Arkansas and Kansas. Flowering from July to October. The different names given in different localities to this plant (Gagroot, Emetic Weed, Asthma Weed, etc.) give some idea of the herbal character of the species. It was formerly much used as an emetic and the Indians are supposed to have smoked and chewed the bitter leaves, hence the name " Indian tobacco."

CARDINAL FLOWER; RED LOBELIA

Lobelia cardinalis

GREAT OR BLUE LOBELIA

Lobelia syphilitica

Kalm's or Brook Lobelia

Lobelia kalmii Linnaeus

Plate 222b

A small, low, slender herb, perennial by short offsets; stems 6 to 20 inches long, smooth, very slender, erect or reclining, leafy and paniculately branched. Lower and basal leaves spatulate, narrowed into short petioles; upper leaves sessile and shorter. Flowers light blue, about one-third to one-half of an inch long, arranged in a loose raceme at the ends of the stems and branches on threadlike stalks as long as the flowers but not exceeding the linear-lanceolate bracts which subtend them. Calyx tube top-shaped or obovoid, half as long as the lanceolate lobes. Corolla two-lipped, the upper lip two-cleft and narrow, the lower lip cleft into three spreading lobes which are much broader than those of the upper lip. Fruit a small globose capsule, not inflated.

On wet banks, boggy meadows and swamps, or on wet ledges of rocks about waterfalls, from Nova Scotia to New Jersey, west to Ontario, Manitoba, Ohio, Michigan and Iowa. Flowering from July to September.

The Water Lobelia (L o b e l i a d o r t m a n n a Linnaeus) is an aquatic perennial with numerous white, fibrous roots. Leaves linear, 1 to 2 inches long, fleshy, tufted at the base of the hollow stem and submerged. Flowers pale blue in a loose raceme at summit of the stem. Borders of ponds, from New Jersey and Pennsylvania to Newfoundland, Wisconsin and British Columbia.

The Spiked Lobelia (L o b e l i a s p i c a t a Lamarck) has pale blue flowers in an elongated spikelike raceme sometimes 1 to 2 feet long, each flower one-fourth to one-third of an inch long. Leaves broadly oblong at base of stem, becoming spatulate higher up and finally narrowing down to linear bracts subtending the flowers. In moist or dry sandy soil, Prince Edward Island to Saskatchewan, south to North Carolina, Alabama, Louisiana and Arkansas.

Nuttall's Lobelia (L o b e l i a n u t t a l l i i Roemer & Schultes) is very slender. The pedicels are longer than the bracts but shorter than the small pale-blue flowers. Common in sandy swamps along the coast.

Chicory Family

Chicoriaceae

A family closely allied to the Sunflower family (Compositae). Stems usually with milky, acrid or bitter juice. Flowers in heads, surrounded by involucral bracts; flowers all alike and perfect. Calyx tube completely adnate to the ovary, its limb (pappus) of scales, simple or plumose bristles, or both wanting. Corolla gamopetalous, with a short or long tube, and a strap-shaped (ligulate), usually five-toothed limb (ray).

In addition to those species illustrated here, the Chicory family contains many other species, including the common Chicory, Dandelion, Oyster Plant or Salsify, Sow Thistle, Lettuce, Wild Prickly Lettuce and several additional species of Hawkweeds and Rattlesnake weeds.

Devil's-paintbrush; Orange Hawkweed

Hieracium aurantiacum Linnaeus

Plate 223b

A perennial, low-growing, very hairy weed, spreading by means of vigorous and rapidly growing leafy stolons. Leaves basal, spatulate or oblong, blunt at the apex, narrowed at the base, usually entire, 2 to 5 inches long, one-fourth to 1 inch wide, very hairy. Flowers borne on a slender, hairy, leafless stem (rarely with one or two small leaves), 6 to 20 inches high, the heads of flowers bright orange-red in color, one-half to 1 inch broad, few or several in a rather dense inflorescence or cluster at the summit of the stem, the upper part of the stem and the inflorescence thickly dotted with black, glandular-tipped hairs. Flowers of the head all alike, with five-toothed, strap-shaped corollas. Involucres one-third to one-half of an inch high, composed of linear-lanceolate green bracts, densely covered with black hairs, the bracts arranged in two or three series.

In fields, woods and along roadsides, widely distributed as an obnoxious

A. INDIAN OR WILD TOBACCO; EYEBRIGHT
Lobelia inflata

B. KALM'S OR BROOK LOBELIA
Lobelia kalmii

A. KING DEVIL
Hieracium florentinum

B. DEVIL'S-PAINTBRUSH; ORANGE HAWKWEED
Hieracium aurantiacum

weed in the eastern states, but native of the Old World. Flowering from June to September.

King Devil

Hieracium florentinum Allioni

Plate 223a

Stems slender, smooth or somewhat hispid, 1 to 3 feet high from a perennial root. Leaves all basal, oblong or spatulate, entire, either pointed or blunt at the apex and narrowed at the base into margined petioles, somewhat hirsute with stiff hairs, or smooth, 2 to 4 inches long, one-fourth to three-fourths of an inch wide. Sometimes one to three smaller leaves are borne on the stem near its base. Inflorescence of several bright-yellow heads of flowers, each head one-third to one-half of an inch broad, arranged in a corymb on short, somewhat glandular-hairy peduncles. The involucre about one-fourth of an inch high, composed of linear, pointed bracts, pilose and somewhat glandular-hairy, overlapping in about two series.

In fields, meadows and thickets and along roadsides, New York and Ontario to Quebec and Maine. Native of Europe. In some places an obnoxious weed. Unlike the Orange Hawkweed, it does not spread by leafy stolons, and hence is usually not so abundant.

Rough Hawkweed

Hieracium scabrum Michaux

Plate 224

Stems stout and leafy up to the inflorescence, without a basal tuft of leaves at flowering time, 1 to 4 feet high, very hairy with rather reddish hairs and glandular-hairy above. Leaves hairy, oblong or broadly spatulate, 2 to 4 inches long, 1 to 2 inches wide, blunt at the apex, the lower leaves narrowed into margined petioles, the upper narrowed to a sessile base, their margins sparingly denticulate. Inflorescence of numerous yellow heads, one-half to three-fourths of an inch broad, on reddish colored, stout, densely glandular-hairy peduncles. Involucres one-third to one-half

of an inch high, glandular-hairy, the principal bracts linear and pointed, in one series with a few very small outer ones.

In dry woods and clearings, Nova Scotia to Minnesota, Georgia and Iowa. Flowering from July to September.

Rattlesnake-weed; Poor-Robin's-plantain

Hieracium venosum Linnaeus

Plate 225

A perennial herb, sending up a smooth, usually solitary and leafless stem, paniculately branched above, 1 to 3 feet high, with a tuft of basal leaves spreading on the ground. Leaves smooth or sometimes hairy, characteristically marked with purple veins, suggestive of the markings on a snakeskin, oblong-spatulate, blunt at the apex, narrowed at the base into petioles, though sometimes sessile, 1 to 5 inches long, one-half to 1½ inches wide, paler on the under surface, the margins glandular-denticulate. Inflorescence consisting of several yellow heads, about two-thirds of an inch broad, each containing fifteen to forty ray flowers, and borne on rather long, slender, spreading peduncles, smooth or slightly glandular-hairy. Involucre cylindric, about one-fourth of an inch high, with one series of long, narrow, nearly smooth bracts and a few short outer ones.

In dry woods and thickets, usually in poor or sandy soil. Maine and Ontario to Manitoba, south to Georgia, Kentucky and Nebraska. Flowering from late in May to October. Individuals are sometimes found without the purple-colored veins in the leaves.

Gall-of-the-earth; Tall Rattlesnake-root

Nabalus trifoliolatus Cassini

Plate 226

Stems smooth, stout and sometimes purplish, with milky juice, leafy and 3 to 9 feet high, from a perennial root. Leaves thin, the lower ones very long petioled, the upper short petioled or sessile, all usually divided into three segments, which are sometimes stalked, irregularly toothed, or

ROUGH HAWKWEED
Hieracium scabrum

RATTLESNAKE-WEED; POOR-ROBIN'S-PLANTAIN

Hieracium venosum

GALL-OF-THE-EARTH; TALL RATTLESNAKE-ROOT
Nabalus trifoliolatus

the upper leaves sometimes entire. Inflorescence consisting of many drooping heads, in loose clusters of few or several together. Heads with seven to twelve whitish or pale yellowish ray flowers (no disk flowers), surrounded by a pale green, narrow, smooth, cylindric involucre about one-half of an inch long, becoming purplish when old, consisting of six to eight principal bracts, equaling the pappus in length, and a few small bracts at the base of the involucre. Pappus light brown in color.

In woods and thickets, Newfoundland to Pennsylvania, Indiana, Delaware and Tennessee. Flowering from August to October. Not a showy plant but rather odd in appearance and representative of a group which in this State contains about half a dozen related species.

Sunflower Family

Compositae

The Sunflower family comprises the largest group of flowering plants, including in the flora of the whole world about one-tenth of the known species, or some 12,000 in number. They are chiefly herbs in our region, but in warmer parts of the world, shrubs and tree forms also occur. In New York, about one-fifth of all plants which have rather conspicuous flowers, and might in consequence be designated as wild flowers, belong to this family. In this Memoir, over 50 species, or nearly one-eighth of the total number of plants illustrated, belong to the Sunflower family, and the number would be larger if it were not deemed unnecessary to illustrate all of the many kinds of Goldenrods and Wild Asters.

The chief characteristics of the family, which will aid considerably in an understanding of the descriptions of the following species, is the crowding together of the true flowers into heads. These floral heads, commonly referred to as the " flower," namely, the Sunflower, the Daisy etc. are in reality made up of many small, individual flowers, in contrast to the single flower of the rose or violet. The head is surrounded by an involucre, composed of one to several series of bracts or scales, performing as a whole the

function of a calyx for the entire flower head. The individual bracts are often leaflike in character.

Two kinds of flowers are to be noted in the "heads" of certain Compositae. They are the regular five-toothed or five-lobed corolla, as seen in the different species of Eupatorium, and the irregular, strap-shaped or ligulate corolla, in the ray flowers of the Wild Asters. Sometimes both kinds are found in the same head, as in the common Daisy, and then the strap-shaped flowers around the margin are referred to as ray flowers, and the densely packed tubular flowers in the center of the head are called disk flowers. Very often the disk flowers are of one color and the ray flowers of a different color. In some cases we find heads composed entirely of disk flowers (Thistles).

The stamens are five in number, attached to the inside of the corolla tube and usually cohere by their anthers in a ring around the style, which is commonly two-cleft at the summit, that is, a two-parted stigma. The ray flowers are usually without stamens, when disk flowers are present, and sometimes some flowers (either disk or ray, as the case may be) are entirely neutral (without stamens or pistils). The ovary is one-celled, containing one ovule which ripens into a small, dry, one-celled, one-seeded, indehiscent fruit, known as an achene. This achene is admirably adapted for seed dissemination by means of the persistent pappus, which matures along with the fruit. In the case of Bidens, the pappus consists of two barbed processes projecting from the achene, which catch in the shaggy coats of animals and on the clothing of passing persons and is thus distributed wide distances. In other cases the pappus consists of hairlike tufts, as in the Thistle, which enable the seed to be carried great distances by the wind.

The Compositae represent the most highly developed family of flowering plants, in respect to floral structure. By massing the flowers in heads, there is a great economy of space and tissue gained for the plant, and also greater certainty of pollination for the individual flowers, as a visit from one insect may result in the pollination of from several to many

flowers. The showiness gained by massing the small flowers together serves as an added attraction to insects.

The Compositae contain many cultivated plants, including ornamental species. The Asters, Chrysanthemums, Pyrethrams, Gaillardias, Heleniums, Helianthus (Sunflowers), Rudbeckias (Coneflowers), Dahlias and many others are some of the common and highly ornamental species.

Beach Clotbur

Xanthium echinatum Murray

Plate 213b

An annual, coarse, rough herb of seashores and river beaches, with rough, purplish or blotched stems, 1 to 2 feet high. Leaves alternate, tough, coarse, very rough with scattered, short, papillose hairs and obscurely toothed and more or less lobed. Inflorescence rather small, consisting of heads of greenish discoid flowers, the staminate ones clustered in heads at the ends of the branches, the pistillate or fertile flowers axillary in the upper leaves. Flowers of the staminate heads with tubular corollas; the pistillate heads consisting of an ovoid or oblong closed involucre covered with hooked spines, with no corolla or pappus. Fruit a prickly bur, usually several clustered in the axils of the leaves, ovoid to oval, one-half to two-thirds of an inch long and one-third to one-half of an inch thick, covered with hooked prickles, and densely hairy with reddish hairs, the summit of the bur bearing two stout, hispid, incurving clawlike beaks, the interior of the bur two-celled, each cavity containing one obovoid or oblong achene.

On sea beaches, lake and river shores, and occasionally in waste ground, Nova Scotia to North Carolina, west to Minnesota and North Dakota. In New York found mainly in sandy soil and on beaches of Long Island and Staten Island, the Great Lakes and a few inland localities. Flowers appear in July and August and the bur is ripe in September or October.

The Common Cocklebur or Clotbur (X a n t h i u m c a n a d e n s e Miller) is a common weed almost everywhere. It resembles the one illus-

trated here, but is usually larger in every way, the beaks of the bur being almost straight and more or less divergent.

The Clotburs (Xanthium) are usually placed in the Ragweed family (Ambrosiaceae) but here retained for convenience in the Sunflower family.

Ironweed

Vernonia noveboracensis (Linnaeus) Willdenow

Plate 227

Stems erect, stiff, coarse, simple or somewhat branched, 3 to 9 feet high from a perennial root, roughish-pubescent or nearly smooth. Leaves alternate, narrowly oblong to lanceolate, pointed or elongated at the apex, narrowed at the base into slender petioles, or the upper leaves nearly sessile, margins serrulate, 3 to 10 inches long, one-half to 1 inch wide. Inflorescence consisting of several or many heads of deep-purple flowers, arranged in a loose, cymose panicle at the summit of the leafy stem. Each head one-third to one-half of an inch broad and containing twenty to forty flowers. Involucre of brownish purple or greenish bracts, overlapping in several series, with long, spreading and slender tips, usually two or three times their own length. Flowers all tubular with a regular, five-toothed corolla. Pappus purplish in color.

In moist soil and low grounds, Massachusetts to Pennsylvania and Missouri, south to North Carolina, West Virginia and Mississippi. Flowering in late summer and early fall. In New York, not common north of the lower Hudson valley region and the coastal plain.

Joe-pye Weed; Purple Boneset

Eupatorium purpureum Linnaeus

Plate 228

Stems tall, smooth, often purplish and glaucous, frequently straight, simple or branched only at the summit, 3 to 10 feet high from a perennial root. Leaves ovate, oval or ovate-lanceolate, petioled, toothed, 4 to 13 inches long, one-half to 3 inches wide, veiny and sometimes slightly pubescent on the under side of the leaf, arranged in whorls of threes to

IRONWEED

Vernonia noveboracensis

JOE-PYE WEED; PURPLE BONESET

Eupatorium purpureum

sixes, commonly in fours. The inflorescence consists of large, terminal, loose, compound clusters of numerous flower heads, pinkish lavender to purple in color; each head composed of tubular flowers only. Involucres of individual heads cylindric, with pinkish purple, oblong, blunt bracts, overlapping in four or five series.

In moist soil, woods and low thickets, especially common in wet places along streams, New Brunswick to Manitoba, south to Florida and Texas. Flowering in August and September.

The Spotted Joe-pye Weed (E u p a t o r i u m m a c u l a t u m Linnaeus) is similar to E. p u r p u r e u m, but the stem is spotted with purple and usually rough or pubescent; the flowers usually pinkish purple in color.

Hyssop-leaved Thoroughwort

Eupatorium hyssopifolium Linnaeus

Plate 229b

Stems roughish-puberulent, rather bushy, 1 to 2 feet high, from a perennial root, bearing opposite, linear leaves and densely corymbosely branched above. Numerous smaller leaves fascicled in the axils of the stem or on short, axillary branches; leaf blades entire, blunt at the apex, narrowed at the base, one-half to 2 inches long, one-twelfth to one-sixth of an inch wide, firm and usually with more or less revolute margins. Heads white, arranged in a flat-topped panicle, each head about one-third of an inch high with about five tubular flowers, surrounded by a campanulate involucre, composed of linear-oblong, puberulent bracts imbricated in about three series, the outer ones shorter.

In dry fields, Massachusetts to Florida and Texas. Flowering in August and September.

Rough or Vervain Thoroughwort

Eupatorium verbenaefolium Michaux

Plate 229a

Stems erect, more or less branched at the summit, rough-pubescent, slender, 2 to 7 feet high from a perennial root. Leaves opposite, rough-

pubescent, closely sessile or rarely short petioled, blunt at the apex, rounded at the base, crenate toothed 1 to 4 inches long, one-half to 1 inch wide, the upper pairs smaller and distant. Heads white, about one-fourth of an inch high, each with about five tubular flowers, the heads arranged in a cymose panicle; involucre bell-shaped, composed of about three series of overlapping linear-lanceolate, pointed and densely pubescent bracts, the outer ones shorter.

In moist, usually sandy soil, mainly near the coast from Massachusetts to Florida, West Virginia and Louisiana. Flowering from July to September.

Common Thoroughwort; Boneset

Eupatorium perfoliatum Linnaeus

Plate 230

Stems stout, rigid, hairy, branched above, 2 to 5 feet high from a perennial root. Leaves tough, veiny and wrinkled on both surfaces, opposite and united by their bases (connate-perfoliate), the upper pairs usually not united, lanceolate, long pointed at the apex, 4 to 8 inches long, 1 to $1\frac{1}{2}$ inches wide, pubescent on the under surface, the margins finely crenate-toothed. Inflorescence consisting of many heads in a rather congested, nearly flat-topped cyme; each head one-sixth to one-fourth of an inch high and ten to sixteen-flowered, dull leaden-white in color. Involucre campanulate, pubescent, with lanceolate bracts arranged in two or three series.

Common in wet meadows and low grounds, especially along streams in marshes and swamps, Nova Scotia and New Brunswick to Manitoba, south to Florida, Texas and Nebraska. Flowering in late summer, from July to September. In former times and even yet in some rural sections, boneset tea, made from the dried leaves of this plant, is prized for certain medicinal properties.

A. ROUGH OR VERVAIN THOROUGHWORT
Eupatorium verbenaefolium

B. HYSSOP-LEAVED THOROUGHWORT
Eupatorium hyssopifolium

COMMON THOROUGHWORT; BONESET

Eupatorium perfoliatum

White Snakeroot

Eupatorium urticaefolium Reichard

Plate 231

Stems erect, smooth, usually much branched, 1 to 4 feet high from a perennial root. Leaves opposite, ovate, thin, coarsely and sharply toothed, 3 to 6 inches long, 1 to 3 inches wide, on slender petioles, one-half to $2\frac{1}{2}$ inches long; leaf blades rounded, truncate or cordate at the base, usually long pointed at the apex, showing some resemblance to the leaves of the Nettle (Urtica). Inflorescence a rather loose cymose-paniculate cluster of small heads, each with ten to thirty white, tubular flowers; involucres campanulate, one-sixth of an inch high, the bracts linear and arranged in two nearly equal series.

In rich woods or in thickets and clearings, New Brunswick to Florida, west to Ontario, Nebraska and Louisiana. The plant is said to be poisonous to cattle.

Climbing Hempweed or Boneset

Mikania scandens (Linnaeus) Willdenow

Plate 232a

Stems smooth and twining or climbing over surrounding vegetation, 5 to 15 feet long, from a perennial root. Leaves opposite, ovate or hastate, deeply cordate at the base with rounded basal lobes, long pointed at the apex, somewhat triangular in shape, 2 to 4 inches long, 1 to 2 inches wide, borne on slender petioles. Heads in compound clusters, borne at the ends of the branches, each head four-flowered, surrounded by oblong involucres of four narrow bracts. Corollas white or pink.

In swamps and moist soil in woods and thickets along streams or in low, wet places, Maine to western Ontario, south to Florida and Texas. Flowering from July to September.

Maryland Golden Aster

Chrysopsis mariana (Linnaeus) Elliott

Plate 233b

Stems stout, loosely hairy, usually more than one from a stout, perennial root, nearly erect or ascending, 1 to 2½ feet high and corymbosely branched at the summit. Upper leaves oblong to lanceolate, pointed or blunt, sessile, 1 to 2 inches long; the lower leaves oblanceolate or spatulate and narrowed into petioles, usually blunt, 2 to 4 inches long, one-half to 1 inch wide. Heads of flowers usually numerous, bright yellow, three-fourths to 1 inch broad on glandular peduncles; involucres hemispheric, the bracts glandular, pointed and viscid-pubescent.

In dry or sandy soil, southern New York to Pennsylvania, Florida and Louisiana. Flowering in August and September.

THE GOLDENRODS

Solidago

The Goldenrods comprise a large genus of more than one hundred and twenty-five species, all but a few native of North America. In New York there are found about thirty species of this group. They are perennial, erect herbs, often simple or with few branches; alternate leaves which are either toothed or entire, and numerous small heads of both tubular and ray flowers, or rarely whitish flowers, in terminal or axillary panicles, thyrsi, or cymose-corymbose or capitate clusters. The involucre of each head is oblong or narrowly bell-shaped and composed of bracts overlapping each other in several series, the outer ones successively shorter. Disk flowers usually all perfect, that is, with both stamens and pistils, their corollas tubular and five-lobed; ray flowers arranged in one series and pistillate. Achenes in fruit smooth or angled and usually ribbed. Pappus of numerous, hairlike, rough or nearly smooth, white or slightly tawny bristles.

The amateur botanist may experience some difficulty in the use of the following key to the New York species of Goldenrod, since it is practically

WHITE SNAKEROOT

Eupatorium urticaefolium

A. CLIMBING HEMPWEED OR BONESET
Mikania scandens

B. SLENDER FRAGRANT GOLDENROD; QUOBSQUE WEED
Euthamia tenuifolia

impossible to indicate the distinguishing characters without the use of technical terms.

Ray flowers more numerous than the disk flowers; heads corymbose-paniculate (*Flat-topped Goldenrods*)

Leaves distinctly three-ribbed; heads twenty to thirty-flowered..... Euthamia graminifolia

Leaves one-ribbed; involucre campanulate, one-sixth of an inch high or less..... Euthamia tenuifolia

Ray flowers not more numerous than the disk flowers (*True Goldenrods*)

Tips of the involucral bracts, or some of them spreading or recurved; leaves smooth.. Solidago squarrosa

Tips of the involucral bracts all erect and appressed

Heads in axillary clusters or also in a terminal spikelike sometimes branched thyrsus

Heads one-sixth to one-fourth of an inch high, chiefly in axillary clusters; achenes pubescent

Stem and branches terete; leaves lanceolate to oblong..... Solidago caesia

Stem and branches grooved or angled; leaves broadly oval, contracted into margined petioles.....Solidago flexicaulis

Heads one-sixth to one-fourth of an inch high, chiefly in a terminal spikelike thyrsus; achenes smooth or nearly so

Rays white; stem pubescent.....Solidago bicolor

Rays yellow; stem densely pubescent.....Solidago hispida

Rays yellow; stem smooth or sparingly pubescent; leaves thick, dentate or the upper entire, not acuminate.....Solidago erecta

Heads about one-half of an inch high; bracts elongated, pointed; leaves ovate.....Solidago macrophylla

Heads in a terminal, simple or branched thyrsus, not at all or scarcely secund on its branches; plant glabrous

Low alpine species, 10 inches high or usually less; heads with thirty flowers or more.....Solidago cutleri

Taller species, not arctic-alpine

Bracts of the involucre linear-subulate, very acute; stem puberulent... Solidago puberula

Bracts of the involucre blunt or slightly pointed; stem glabrous or sparingly pubescent above

Bog species; inflorescence wandlike....*Solidago uliginosa*

Upland species; inflorescence various

Heads very short-peduncled

Leaves thick, firm in texture, little toothed or entire; very tall with oval or broadly ovate lower leaves which are serrate.....*Solidago speciosa*

Leaves thin in texture, at least the lower ones serrate; low species.....*Solidago randii*

Heads distinctly slender peduncled; basal leaves narrowly oblanceolate, one-third of an inch wide or less.....*Solidago racemosa*

Heads in a terminal, usually large panicle, secund on its spreading or recurved branches

Maritime plants with thick fleshy entire leaves.....*Solidago sempervirens*

Not maritime; leaves not fleshy

Leaves all entire, thin and glabrous.....*Solidago odora*

Leaves, at least the lower ones, more or less toothed or serrate

Leaves pinnately-veined, not triple-nerved

Stems densely pubescent; leaves more or less so and rugose-veiny beneath, sharply serrate.....*Solidago rugosa*

Stems glabrous, or merely puberulent above

Leaves very rough on the upper surface, serrulate.....*Solidago patula*

Leaves smooth, or minutely roughened on the upper surface

Racemes few, widely divergent, very slender, lower leaves oblong, coarsely serrate and thin.....*Solidago ulmifolia*

Racemes numerous, spreading, recurved or ascending

Leaves all oblong or oblong-lanceolate and sessile.....*Solidago elliotii*

Leaves, at least the lower ones petioled, lanceolate or ovate-lanceolate

Leaves firm, ovate-lanceolate or oblong-lanceolate; heads about one-sixth of an inch high; racemes short; rays several....
Solidago neglecta

Leaves firm, narrowly lanceolate; heads about one-sixth of an inch high; racemes few, short, rays one to five.....
Solidago uniligulata

Leaves firm, lanceolate or oval-lanceolate; heads one-sixth to one-eighth of an inch high; racemes numerous, slender.....
Solidago juncea

Leaves thin, the lower broadly ovate, short-acuminate; heads one-sixth to one-fourth of an inch high; racemes numerous.....
Solidago arguta

Leaves triple-nerved, that is, with a pair of lateral veins much stronger than the others

Heads small, the involucre only 1¼ lines high or less; stem glabrous or pubescent.....Solidago canadensis

Heads larger, the involucre one-sixth to one-fourth of an inch high

Stems glabrous; leaves and involucral bracts thin.....
Solidago serotina

Stem pubescent or scabrous

Leaves lanceolate, sharply serrate or entire, rough above.....Solidago altissima

Leaves oblanceolate, spatulate, oblong or ovate; minutely rough-pubescent, grayish; lower leaves oblanceolate; crenate; heads one-sixth to one-fourth of an inch high
Solidago nemoralis

Heads in a terminal, corymbiform, sometimes thyrsoid cyme, forming a flat-topped inflorescence. (genus *Oligoneuron* Small)

Leaves ovate, oblong, or oval, mostly rough on both sides .....
Solidago rigida

Leaves lanceolate, linear, oblong or oblanceolate, glabrous or nearly so
Lower leaves oblong-lanceolate, serrulate; plant 3 to 4 feet tall.....
Solidago ohioensis
Lower and upper leaves all lanceolate or linear, entire, the basal leaves 4 to 5 inches long; plant 5 to 24 inches high.....
Solidago houghtonii

In addition, there has recently been described from Long Island an additional species (Solidago aestivalis Bicknell), said to be like S. arguta Miller, but essentially smooth. The description suggests a form of S. patula Muhlenberg.

Bushy, Fragrant or Flat-topped Goldenrod

Euthamia graminifolia (Linnaeus) Nuttall

Plate 234

Stems erect, paniculately branched above, smooth or nearly so, 2 to 4 feet high, perennial by running rootstocks. Leaves numerous, linear-lanceolate, sessile, 1 to 5 inches long, one-sixth to one-third of an inch wide, three to five-nerved, with rough, hairy edges, and sometimes resinous dotted. Inflorescence a flat-topped compound corymb, the individual golden-yellow heads sessile in capitate clusters. Bracts of the involucre yellowish, oblong or oblong-lanceolate, slightly viscid.

Moist or sandy fields and roadsides, New Brunswick to Saskatchewan, Alberta, south to Florida, Nebraska and Wyoming. Flowering from July to September.

Slender Fragrant Goldenrod; Quobsque Weed

Euthamia tenuifolia (Pursh) Greene

Plate 232b

Stems slender, smooth or usually somewhat resinous, branched above, 8 to 18 inches high. Leaves numerous, narrowly linear, entire, long pointed at the apex, sessile and narrowed at the base, punctate, one-nerved, lateral nerves if present very inconspicuous, 1 to 3 inches long, often with smaller leaves clustered in the axils; heads of flowers about one-eighth of an inch

A. WHITE-TOPPED ASTER
Sericocarpus asteroides

B. MARYLAND GOLDEN ASTER
Chrysopsis mariana

BUSHY, FRAGRANT OR FLAT-TOPPED GOLDENROD

Euthamia graminifolia

high, very numerous and crowded into a dense, nearly flat corymb; involucre oblong-campanulate, its bracts oblong; ray flowers yellow, six to twelve in number; disk flowers only four to six in number.

In dry, sandy soil, eastern Massachusetts to Florida and Louisiana, and locally inland to Illinois and Wisconsin. Flowering from August to October.

Blue-stemmed or Wreath Goldenrod

Solidago caesia Linnaeus

Plate 235a

A smooth, slender plant, the stem often glaucous and usually bluish or purplish, 1 to 3 feet high from a perennial root, and simple or somewhat branched. Leaves oblong-lanceolate or lanceolate, sessile, long pointed at the apex, smooth, sharply toothed, 2 to 6 inches long, one-fourth to 1¼ inches wide. Heads of flowers one-fourth of an inch high or less, in axillary clusters or racemes, sometimes with some or nearly all of them forming a short terminal thyrsus; bracts of the involucre blunt and appressed.

In rich or dry woods and thickets, Nova Scotia to Minnesota, south to Florida and Texas. Flowering from August to October.

Zigzag or Broad-leaved Goldenrod

Solidago flexicaulis Linnaeus

Plate 236

Stems rarely branched, zigzag, 1 to 3 feet high, smooth and angled. Leaves ovate, long pointed at the apex, thin in texture, narrowed and usually abruptly so at the base into margined petioles, smooth or slightly pubescent on the under surface, the margins sharply toothed. Heads of flowers about one-fourth of an inch high in short, axillary, racemose clusters, rarely also in a narrow terminal thyrsus; bracts of the involucre blunt or pointed, appressed.

In rich woods and thickets, Nova Scotia to New Brunswick and Minnesota, south to Georgia, Tennessee and Missouri. Flowering in late summer, usually from July to September.

White or Pale Goldenrod; Silverrod

Solidago bicolor Linnaeus

Plate 237a

Stems stout, hairy or sometimes nearly smooth, 1 to 4 feet high, sometimes branched. Basal and lower leaves obovate or oblong and blunt, narrowed into long, margined petioles, crenulate-toothed, more or less hairy; the upper leaves smaller and narrower, oblong to lanceolate, pointed or blunt, sessile or nearly so and often entire. Heads of flowers one-fourth of an inch high or less, crowded in a terminal thyrsus, 2 to 8 inches long, sometimes also clustered in the upper axils; rays white; bracts of the involucre whitish, the midvein of each bract broadened toward the blunt tip.

In dry or sandy soil, Prince Edward Island west to Ontario and Minnesota, south to Georgia and Tennessee. Flowering from August to October.

Downy Goldenrod

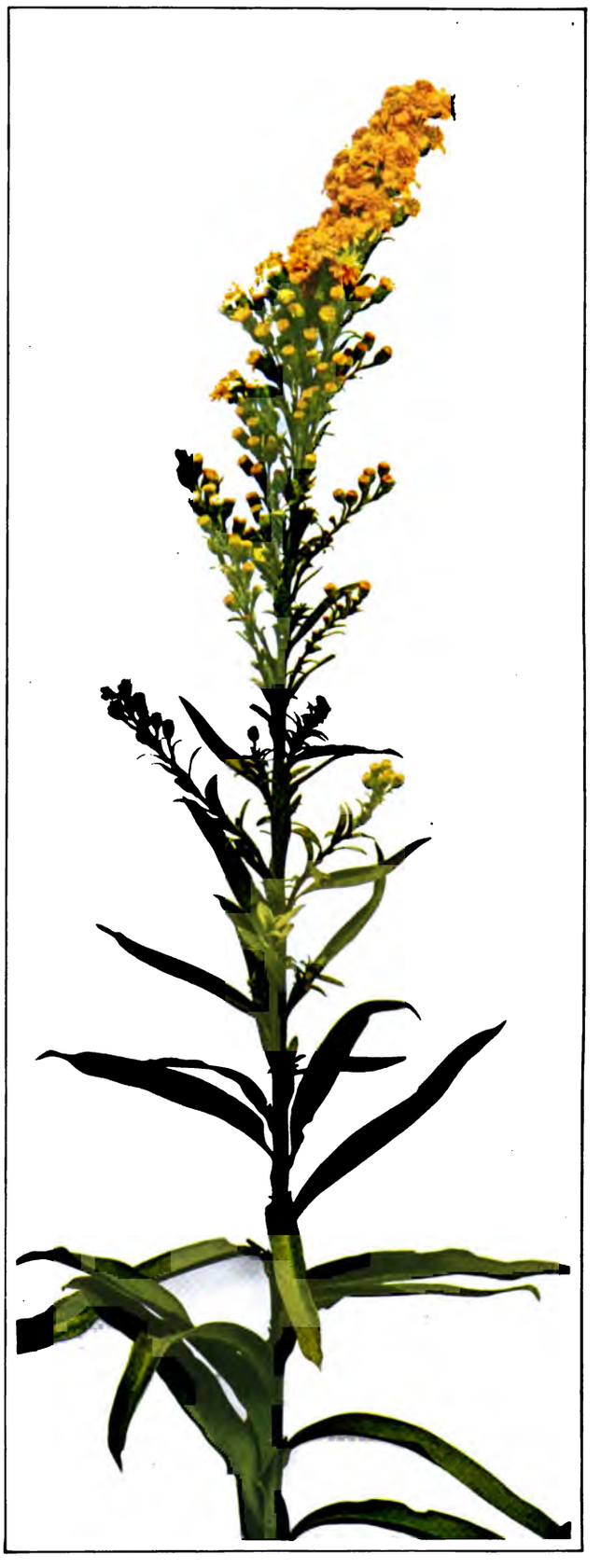
Solidago puberula Nuttall

Plate 237b

Stems rather slender, 1½ to 3 feet high, rarely branched, minutely puberulent or nearly smooth. Basal leaves and often the lowest leaves of the stem spatulate, blunt or pointed, usually sharply toothed, 2 to 4 inches long and 1 inch or less wide, narrowed into margined petioles; stem leaves oblong-lanceolate, pointed, entire or slightly toothed, 1 to 2 inches long, sessile or the lower ones petioled. Heads of flowers numerous, arranged in a terminal, often leafy thyrsus, the branches of which are ascending or spreading; each head of flowers about one-fourth of an inch high with several bright yellow rays. Bracts of the involucre slender and very sharp-pointed.

In sandy or dry soil, Prince Edward Island to Florida and Mississippi, west to Tennessee. In New York most abundant near the coast, but frequent in sandy places as far north as Franklin county.

A. BLUE-STEMMED OR WREATH GOLDENROD
Solidago caesia



B. SEASIDE GOLDENROD
Solidago sempervirens

ZIGZAG OR BROAD-LEAVED GOLDENROD

Solidago flexicaulis

A. WHITE OR PALE GOLDENROD; SILVERROD
Solidago bicolor

B. DOWNY GOLDENROD
Solidago puberula

Seaside Goldenrod

Solidago sempervirens Linnaeus

Plate 235b

Stem stout and leafy, rarely branched, 2 to 8 feet high, smooth or slightly puberulent above. Leaves entire, thick, fleshy with two to five pairs of lateral veins, the lower or basal leaves oblong, spatulate or lanceolate and usually blunt at the apex, often 8 to 12 inches long and narrowed at the base into long petioles; upper leaves smaller, sessile, lanceolate to oblong-lanceolate and pointed. Heads of flowers one-fourth of an inch high or more, in one-sided racemes forming a large terminal, often leafy panicle; rays showy, eight to ten in number in each head; bracts of the involucre lanceolate and pointed.

On salt marshes, sea beaches and along tidal rivers and in sandy soil near the coast, Nova Scotia to Florida and Mexico. Flowering from August to November.

Canada or Rock Goldenrod

Solidago canadensis Linnaeus

Plate 238

Stems slender, smooth or finely hairy above, 1 to 5 feet high, usually several or many plants together and spreading by underground rootstocks. Leaves thin, triple-nerved, linear-lanceolate, 2 to 5 inches long, entire or toothed with somewhat appressed teeth, long pointed at the apex, sessile or the lowest leaves petioled. Heads of flowers very small, about one-eighth of an inch or less high, arranged on one side of spreading branches which form a large, often loose panicle; rays four to six in number, short; bracts of the involucre thin, linear and pointed.

Hillsides and thickets or banks of streams, Newfoundland to Saskatchewan, south to Virginia, Tennessee and South Dakota. Flowering from August to October.

Houghton's Goldenrod

Solidago houghtonii Torrey & Gray

Plate 239a

Stems slender, smooth below, sometimes slightly hairy above, 8 to 24 inches high. Leaves linear, the basal and lower ones petioled, 4 to 5 inches long, one-sixth to one-third of an inch wide, three-nerved and entire, the sessile stem leaves becoming successively smaller upward, the uppermost leaves small and bractlike. Heads of flowers about one-fourth of an inch high, few, forming a small corymbose cyme, each head with twenty to thirty flowers; involucre broadly campanulate, its bracts oblong and blunt.

In swamps and bogs, north shore of Lake Michigan and Lake Huron, and in Bergen swamp, Genesee county, New York. Flowering in August and September.

THE ASTERS

Aster

The Wild Asters comprise a genus of over two hundred and fifty species, of which nearly fifty species occur in New York State. They are mostly perennial, branching herbs with alternate, simple leaves and corymbose or paniculate heads of both tubular and radiate flowers. Involucre varying from hemispheric to campanulate or turbinate, with its bracts overlapping in several series, the outer ones usually shorter and smaller. Ray flowers white, pink, purple, blue or violet, pistillate. Disk flowers perfect, tubular, their corollas five-lobed, usually yellow and changing to red, brown or purple; pappus bristles slender, numerous, rough or minutely toothed, usually in one, sometimes in two series; achenes mostly flattened and nerved.

Key to the New York Species of Aster

A Basal and lower leaves, or some of them, cordate and slender petioled

Stem leaves, or some of them, cordate-clasping; plant rough when dry.....
1 A. undulatus

None of the stem leaves cordate-clasping; rays white, violet or rose

Rays white or rarely rose, usually two-toothed; plants not glandular

CANADA OR ROCK GOLDENROD
Solidago canadensis

A. HOUGHTON'S GOLDENROD
Solidago houghtonii

B. PHILADELPHIA FLEABANE; SKEVISH; DAISY FLEABANE
Erigeron philadelphicus

Involucre ovoid, campanulate or turbinate; its bracts mostly obtuse or rounded; basal leaves few and small, or commonly none (except A. glomeratus)

Leaves membranous or thin, smooth or nearly so

Heads short-peduncled, three-fourths of an inch broad or less, the disk turning crimson; leaves acute or short-acuminate
2 A. carmesinus

Heads long-peduncled, three-fourths of an inch broad or more, the disk turning brown or reddish; leaves long-acuminate

Heads 1 inch broad or more; leaves of the branches large, long, lanceolate, acuminate.....3 A. tenebrosus

Heads three-fourths to 1 inch broad; leaves of the branches small, obtuse or acute.....4 A. divaricatus

Leaves thick, firm, rough; heads one-third to one-half of an inch high; inflorescence paniculate or glomerate

Leaves acute or short-acuminate, pilose beneath; inflorescence glomerate.....5 A. glomeratus

Leaves long-acuminate; not pilose beneath; inflorescence open-paniculate.....6 A. claytoni

Involucre cylindric; its bracts tapering to an obtuse apex; basal leaves large, tufted

Bracts of the involucre pale, scarious, usually without herbaceous tips.....7 A. curvescens

Bracts of the involucre broader, with herbaceous tips.....
8 A. schreberi

Rays violet, usually three-toothed; plants glandular

Predominant glands large, capitate; leaves thick, coarse, heavy

Sinus broad; glands chiefly confined to the inflorescence; plant usually harsh.....9 A. macrophyllus

Sinus narrow; glands abundant on the leaves and stem; growing plant clammy.....10 A. roscidus

Predominant glands minute, scarcely capitate; leaves usually thin

Inflorescence very irregular, paniculate-corymbose; plants often 4 to 5 feet high; broader leaves large, cordate, acute..11 A. nobilis

Inflorescence rather regular, flat, or convex-topped; plants usually less than 2½ feet tall

Sinus broad and shallow

Broader leaves orbicular-cordate, their teeth and the inflorescence-leaves inconspicuous..12 A. ianthinus

Broader leaves reniform, sharply incised; some inflorescence-leaves conspicuous.....13 A. violaris

Sinus rather deep and narrow; broader leaves ovate-cordate, sharply serrate.....14 A. multiformis

Rays blue or purple; plants not glandular; bracts of the involucre appressed or nearly so; rays eight to twenty

Leaves all entire, or nearly so, thick and firm, rough-puberulent on both sides, the upper bractlike.....15 A. azureus

Leaves nearly all sharply serrate and thin

Heads 2 to 3 lines high, numerous; bracts obtuse or bluntish

Leaves rough; petioles not wing-margined; bracts appressed..16 A. cordifolius

Leaves smooth, or nearly so; petioles, or some of them wing-margined.....17 A. lowrieanus

Heads 4 to 5 lines high, usually few; bracts acute or acuminate....18 A. lindleyanus

Heads 3 to 5 lines high, numerous; bracts acute or acuminate; stems glabrous or nearly so; bract-tips spreading.....19 A. sagittifolius

B No cordate and petioled leaves; those of the stem, or some of them, with more or less cordate or auricled clasping bases (only slightly auricled in A. tardiflorus and sometimes in A. laevis)

Stem rough, or hirsute-pubescent

Leaves, at least the lower, serrate; stem hispid-pubescent; bracts glabrous or ciliate.....20 A. puniceus

Leaves entire, oblong, linear or lanceolate

Heads one-half to 1 inch broad, the linear to linear-lanceolate leaves but slightly clasping; bracts hispid or ciliate

21 A. amethystinus

Heads 1 to 2 inches broad; leaves sessile and strongly clasping

Stems hirsute; leaves lanceolate; involucre hemispheric; bracts viscid.....22 A. novae-angliae

Stems rough; leaves oblong to lanceolate; involucre turbinate
Leaves thick, firm, very rough, oblong to oval.....
23 A. patens
Leaves thin, roughish, oblong-lanceolate.....
24 A. phlogifolius
Stem glabrous, or only sparingly pubescent above
Leaves sharply serrate
Leaves tapering to the base
Leaves narrowed to the base, the lower into winged petioles.....
25 A. tardiflorus
Leaves scarcely or gradually narrowed at the base.....
20 A. puniceus
Leaves abruptly contracted into margined petioles, often enlarged near the base.....26 A. prenanthoides
Leaves usually strongly cordate-clasping; bracts green-tipped.....
27 A. laevis
Leaves entire or nearly so
Involucre campanulate, its bracts appressed, green-tipped
Stem leaves oblong, lanceolate or oval-lanceolate..27 A. laevis
Stem leaves elongated-lanceolate.....28 A. concinnus
Involucre hemispheric
Bracts in one or two series; leaves linear to lanceolate.....
29 A. longifolius
Bracts in several series, unequal
Bracts linear-subulate; leaves narrowly linear.....
30 A. junceus
Bracts lanceolate, leaves lanceolate, 2 to 6 inches long.....
31 A. novi-belgii

C Leaves sessile or petioled, scarcely or not at all clasping
Leaves silky or silvery-canescent, entire; heads in a narrow raceme; bracts linear
32 A. concolor
Leaves neither silvery, silky nor canescent; leaves entire or toothed
Bracts of the involucre with herbaceous tips
Tips of the involucral bracts spreading (little spreading in A. radula, erect or spreading in A. herveyi); heads large, showy; rays violet to purple

Leaves oblong-lanceolate, sharply serrate, rugose, the basal leaves usually wanting.....33 A. radula
Leaves lanceolate to oblong, the lower sparingly dentate
Basal leaves with unmargined petioles.....34 A. herveyi
Basal leaves with margined petioles, bracts glandular.....
35 A. spectabilis
Involucral bracts all appressed (except in A. multiflorus, a small-headed species); rays mostly white, sometimes purple
Heads unilaterally racemose
Stem leaves oval, oblong, or lanceolate, serrate, or chiefly so
Stem pubescent or glabrate.....36 A. lateriflorus
Stem villous; leaves narrowly lanceolate, thin.....
37 A. hirsuticaulis
Stem leaves linear-lanceolate to linear, nearly entire; stem glabrate.....38 A. vimineus
Heads not unilaterally racemose, mostly paniculate
Involucral bracts spatulate, mostly ciliate, somewhat spreading, at least the outer ones obtuse; plants roughish-puberulent
39 A. multiflorus
Involucral bracts appressed, acute
Heads solitary at the ends of very small-leaved branchlets
40 A. dumosus
Heads paniculate
Stem leaves lanceolate, serrate or entire
Heads 8 to 10 lines broad
Plants glabrous, or sparingly pubescent above
Leaves firm, roughish or rough; rays often purplish; involucral bracts acute
41 A. salicifolius
Leaves thin, smoothish; rays chiefly white; involucral bracts acuminate...
42 A. paniculatus
Plant puberulent all over.....
43 A. tradescanti

Heads 6 to 8 lines broad; stem leaves narrowly lanceolate.....43 A. tradescanti

Stem leaves linear-lanceolate to subulate, mostly entire

Heads scattered, 6 to 9 lines broad; upper leaves linear.....44 A. faxoni

Heads numerous, 4 to 7 lines broad; upper leaves subulate; involucre subhemispheric, 2½ to 3 lines high; rays usually white

Paniculately branched, bushy.....45 A. ericoides

Simple, or with slender ascending branches 46 A. pringlei

Bracts of the involucre without herbaceous tips

Bracts linear-subulate, acuminate

Leaves firm, 3 inches long or less, entire or sparingly serrate.....47 A. nemoralis

Leaves thin, 6 inches long or less, sharply serrate.....48 A. acuminatus

Bracts oblong or oblong-lanceolate, obtuse or acutish; leaves narrow, entire.....49 A. ptarmicoides

D Leaves fleshy, narrow, entire; plants of salt marshes or saline soil

Perennial; heads 6 to 12 lines broad; involucral bracts lanceolate, acuminate.....50 A. tenuifolius

Annual; heads 3 to 5 lines broad; involucral bracts linear-subulate; disk flowers fewer than the very short rays.....51 A. subulatus

Large-leaved Aster

Aster macrophyllus Linnaeus

Plate 240

Stems rather stout, rough, reddish, angled, 1 to 3 feet high from a thick, long, perennial rootstock. Basal leaves forming large patches, three to four to each stem, broad, cordate, with a large, irregular sinus at the base, rough above, harsh, thick, the marginal teeth with curved sides; petioles long and slender, upper leaves oblong with short, broadly winged petioles,

the uppermost sessile and pointed. Inflorescence hairy and glandular, broadly corymbose and more or less irregular; heads of flowers each about one-half of an inch high; peduncles rigid, thickish; ray flowers about sixteen, each about one-half of an inch long, chiefly lavender colored, sometimes violet or paler blue; bracts conspicuously green-tipped, the lower ones pointed, the inner ones oblong and blunt; disk flowers turning reddish brown with age.

In moist or dry, shaded places, Quebec to Minnesota, south to North Carolina. Flowering in August and September. Consists of numerous races, many of them described as species, differing in leaf character, pubescence, shape of inflorescence and other characteristics.

Red-stalked or Purple-stemmed Aster

Aster puniceus Linnaeus

Plate 241

Stem rather stout, more or less branched above, hispid with stiff hairs or nearly smooth, reddish, 2 to 8 feet high. Leaves lanceolate to oblong-lanceolate, long pointed, sessile and clasping the stem by a broad or narrowed base, sharply toothed or nearly entire, usually rough above and pubescent on the midrib or smooth below, 3 to 6 inches long, one-half to 1½ inches broad; bracts of the hemispheric involucre linear or oblong and long pointed, overlapping in about two series, smooth or ciliate, green, loose and spreading, nearly equal in length; ray flowers twenty to forty in number, violet-purple or sometimes paler, one-half of an inch long or longer, showy; pappus nearly white.

In swamps, marshes and along margins of ponds, Newfoundland to Manitoba, south to Georgia, Tennessee, Ohio and Minnesota. Flowering from July to late fall.

Late Purple Aster

Aster patens Aiton

Plate 242a

Stems rather stiff, slender, somewhat rough, 1 to 3 feet high, with several spreading branches toward the summit. Leaves ovate-oblong to oblong-lanceolate, rough or pubescent, thick and somewhat rigid, clasping

LARGE-LEAVED ASTER
Aster macrophyllus

RED-STALKED OR PURPLE-STEMMED ASTER

Aster puniceus

A. LATE PURPLE ASTER
Aster patens

B. STIFF OR SAVORY-LEAVED ASTER
Ionactis linariifolius

the stem by a deeply heart-shaped base, margins rough-ciliate and entire, the apex pointed, or the lower leaves blunt 1 to 3 inches long, those of the branches much reduced in size. Heads of flowers 1 inch broad or sometimes broader, solitary at the ends of the branches; bracts of the broadly turbinate involucres linear-oblong, finely pubescent or roughish and somewhat glandular, overlapping in several series, their green, pointed tips spreading. Ray flowers twenty to thirty, purplish blue or deep violet, one-third to one-half of an inch long; pappus tawny.

In dry, open thickets and fields, Maine to Minnesota, south to Florida and Texas. Flowering from August to October.

Smooth Aster

Aster laevis Linnaeus

Plate 243

Stems rather stout, or slender and stiff, smooth and usually glaucous, branched above or simple, 2 to 4 feet high, from a thick, perennial root. Leaves thick, smooth, slightly rough on the entire or slightly toothed margins, the upper ones sessile and clasping the stem by a heart-shaped base, lanceolate to oblong-lanceolate in shape, 1 to 4 inches long, one-third to 2 inches wide; the lower and basal leaves gradually narrowed into margined petioles; the leaves of the branches usually reduced in size. Heads of flowers numerous, about 1 inch broad; bracts of the bell-shaped involucres rigid, pointed, green-tipped, appressed and overlapping in several series. Ray flowers fifteen to thirty in number, blue or violet; pappus tawny.

In dry or sandy soil of open fields and thickets, Maine to Ontario and Saskatchewan, south to Alabama, Louisiana, Missouri and Colorado. Flowering from late August to October.

Seaside or Low Showy Aster

Aster spectabilis Aiton

Plate 244

Stems erect or ascending, stiff, simple or branched above, usually several or many from a single mat of stout, perennial roots; stems slightly

rough below and more or less glandular above, 1 to 2 feet high. Leaves thickish, firm, the basal and lower ones oval, pointed, 3 to 5 inches long, 1 to 1½ inches wide, sparingly toothed with low teeth, narrowed at the base into slender petioles; upper leaves entire or nearly so, sessile, pointed, linear-oblong; heads several or numerous, about 1½ inches broad, corymbose, very showy; bracts of the hemispheric involucre linear-oblong or slightly spatulate, glandular viscid, overlapping in about five series, their green, bluntish tips spreading. Ray flowers fifteen to thirty in number, bright violet or violet-blue, one-half to seven-eighths of an inch long; pappus whitish.

In dry, sandy soil, chiefly near the coast, Massachusetts to Delaware. Flowering from August to October.

New England Aster

Aster novae-angliae Linnaeus

Plate 245

Stems stout, very leafy and hairy, corymbosely branched above, 2 to 8 feet high, from a stout, perennial root. Leaves lanceolate, entire, rather thin, pointed at the apex, hairy, 2 to 6 inches long, one-half to 1 inch wide, clasping the stem by a broad, heart-shaped base. Heads of flowers numerous, each head 1 to 2 inches broad, clustered at the ends of the branches. Involucres hemispheric, their bracts linear-subulate, somewhat unequal, spreading, green and hairy and usually glandular. Ray flowers numerous, forty to fifty in each head, linear, one-half to two-thirds of an inch long, violet-purple, rarely pink or reddish; achenes pubescent; pappus reddish white.

In moist fields, swamps and wet thickets, often along streams or near water, Quebec to Saskatchewan, south to Alabama, Kansas and Colorado. Usually regarded as the most beautiful of the wild asters. Flowering from August to October.

SMOOTH ASTER

Aster laevis

SEASIDE OR LOW SHOWY ASTER

Aster spectabilis

NEW ENGLAND ASTER

Aster novae-angliae

Starved or Calico Aster

Aster lateriflorus (Linnaeus) Britton

Plate 246b

Stems slender, divergently branched, nearly smooth or puberulent, chiefly erect, 1 to 5 feet high. Basal leaves ovate, slender-petioled; stem leaves broadly lanceolate to oblong-lanceolate, pointed, 2 to 5 inches long, one-half to 1 inch wide, more or less toothed. Leaves of the branches smaller, oblong or linear-oblong. Heads of flowers one-fourth to one-half of an inch broad, in one-sided racemes on the branches, usually numerous and crowded. Bracts of the turbinate involucres linear-oblong, blunt or somewhat pointed, overlapping in about four series, their short, green tips appressed or slightly spreading. Ray flowers numerous, short, white or pale purple; disk flowers purplish; pappus white.

In dry or moist soil, open woods, thickets or fields, Nova Scotia to western Ontario, south to North Carolina, Louisiana and Texas. Variable and consisting of several races or varieties, differing in leaf form, inflorescence and pubescence. Flowering from August to October.

Mountain or Whorled Aster

Aster acuminatus Michaux

Plate 247

Stems zigzag, corymbosely branched above, smooth or minutely pubescent, usually leafless below, 1 to 3 feet high. Leaves thin, broadly oblong, sharp pointed at the apex, narrowed to a somewhat cuneate, sessile base, coarsely and sharply toothed on the margins, smooth or pubescent above and pubescent on the veins beneath, 3 to 6 inches long, one-half to 1½ inches wide, the upper leaves often closer together than the lower ones. Heads of flowers several or numerous, 1 to 1½ inches broad; bracts of the nearly hemispheric involucre very narrow and long pointed, the outer ones much shorter. Ray flowers twelve to eighteen in number, one-half to two-thirds of an inch long, white, sometimes purplish; pappus soft, fine and nearly white.

Moist woods and thickets, Labrador to Ontario and western New York, south to the mountains of Georgia and Tennessee. Flowering from July to October.

Upland White Aster

Aster ptarmicoides (Nees) Torrey & Gray

(*Unamia alba* (Nuttall) Rydberg)

Plate 246a

Stems slender, stiff, usually rough above, frequently several from a single perennial root, corymbosely branched toward the summit, 1 to 2 feet high. Leaves linear-lanceolate, one to three-nerved, entire or with a few distant teeth on the margins, firm, shiny, rough or ciliate on the margins, sessile or very short petioled, the lower and basal ones 3 to 6 inches long, the upper leaves smaller and those of the branches very much reduced in size. Heads of flowers two-thirds to 1 inch broad. Bracts of the nearly hemispheric involucres linear-oblong, smooth, green, overlapping in about four series. Ray flowers ten to twenty in each head, white, one-fourth to one-third of an inch long; pappus white.

In dry or rocky soil, Massachusetts to Vermont and Saskatchewan, south to Pennsylvania, Illinois and Colorado. Flowering from July to September.

Tall Flat-top White Aster

Doellingeria umbellata (Miller) Nees von Esenbeck

Plate 248

Stems rigid, erect, smooth or somewhat pubescent above, striate, corymbosely branched at the top, 1 to 8 feet high from a perennial root. Leaves lanceolate to oblong-lanceolate, ascending, smooth above, usually slightly pubescent beneath, long pointed at the apex, narrowed into short petioles or the upper leaves sessile, hispid-margined, 5 to 6 inches long and one-half to 1 inch wide, the lower leaves reduced in size; basal leaves none. Heads of flowers numerous, one-half to three-fourths of an inch broad in large terminal compound corymbs. Involucres broadly bell-shaped or hemispheric, about one-sixth of an inch high, their bracts lanceo-

A. UPLAND WHITE ASTER
Aster ptarmicoides

B. STARVED OR CALICO ASTER
Aster lateriflorus

MOUNTAIN OR WHORLED ASTER

Aster acuminatus

late, appressed, thin, usually pubescent or ciliate, overlapping in three or four series, the outer ones shortest. Ray flowers ten to fifteen in number, white, pistillate. Disk flowers perfect, the corolla with a slender tube, abruptly expanded into a bell-shaped five-lobed limb; achenes obovoid; pappus double, the outer series of numerous short bristles or scales, the inner series of numerous hairlike bristles, some of which have thickened tips.

In moist soil, open woods, thickets and marshes, Newfoundland to Saskatchewan, south to Georgia, Michigan and Iowa. Flowering from July to October.

Stiff or Savory-leaved Aster

Ionactis linariifolius (Linnaeus) Greene

Plate 242b

Stems very leafy, tufted or often several from a perennial root, puberulent or roughish, 6 to 24 inches high. Leaves linear or spatulate, spreading, one-nerved, stiff, entire, rough and usually ciliolate on the margins, three-fourths to 1½ inches long, sessile, those of the branches much smaller. Heads of flowers several, terminating the branchlets, each about 1 inch broad. Bracts of the turbinate involucres linear-lanceolate, appressed, green and keeled on the back, overlapping in four or five series, the inner ones blunt, the outer ones usually pointed. Ray flowers ten to fifteen in each head, violet or rarely white, one-third to one-half of an inch long; pappus tawny, in two series, the inner with long hairlike bristles, the outer much shorter.

In dry or sandy, sometimes rocky, soil, Maine to Minnesota, south to Florida and Texas. Flowering from July to October.

White-topped Aster

Sericocarpus asteroides (Linnaeus) Britton, Sterns & Poggenberg

Plate 233a

Stems rather stiff, erect or ascending, pubescent or nearly smooth, slightly angled, 1 to 2 feet high, from a perennial root. Leaves alternate, thin, smoothish or somewhat pubescent, ciliate, faintly three-nerved and

pinnately veined, the basal and lower leaves obovate or spatulate, toothed or rarely entire, 2 to 4 inches long, 1 to 1½ inches wide, narrowed below into margined petioles; upper leaves smaller, oblong or oblong-lanceolate, toothed or entire. Heads of flowers about one-half of an inch high, densely clustered in a terminal, cymose panicle; involucres bell-shaped, their bracts coriaceous, oblong, ciliate or pubescent, the outer ones shorter and with green reflexed tips. Ray flowers white, conspicuous, four to six in each head. Disk flowers perfect, their corollas tubular, narrow, yellowish and five-lobed; achenes slightly compressed, linear-oblong, one-nerved on each side, pubescent; pappus of numerous hairlike, rough, brownish or whitish bristles.

In dry or sandy woods, Maine to Ohio, south to Florida, Alabama and Kentucky. Flowering from July to September.

Philadelphia Fleabane; Skevish; Daisy Fleabane

Erigeron philadelphicus Linnaeus

Plate 239b

A slender-stemmed herb 1 to 3 feet high, softly pubescent, perennial by stolons and offsets. Stem and midrib on the under surfaces of the leaves densely downy-pubescent. Basal and lower stem leaves spatulate or obovate, dentate, 1 to 3 inches long, blunt at the apex, narrowed at the base into short petioles; upper stem leaves cordate-clasping and smaller. Heads of flowers one-half to 1 inch broad, in a corymbose panicle, borne on slender peduncles thickened at the summit. Each head with one hundred to one hundred and fifty ray flowers, one-sixth to one-third of an inch long, fringelike, light rose-purple to pinkish in color, surrounding a yellow center of disk flowers. Involucres of the heads depressed-hemispheric, composed of narrow, linear bracts, pubescent and with dry, membranaceous margins. Buds drooping, but flowers borne erect.

In fields and woods, Labrador to British Columbia, Florida and California. Flowering from May to August.

The Poor-Robin's-plantain (E r i g e r o n p u l c h e l l u s) resembles this species but is not as tall and has smaller heads with shorter ray flowers.

TALL FLAT-TOP WHITE ASTER
Doellingeria umbellata

Spicy or Salt-marsh Fleabane

Pluchea camphorata (Linnaeus) DeCandolle

Plate 249b

An annual, branching herb with nearly smooth, or sometimes puberulent, and somewhat grooved, stout stems, 2 to 3 feet high. Leaves alternate, ovate, serrate or denticulate, 3 to 8 inches long, 1 to 3 inches wide, short petioled, the upper leaves almost or quite sessile. Heads of flowers about one-fourth of an inch high, composed entirely of tubular flowers, purplish or pinkish in color, the heads arranged in terminal corymbose cymes, usually several or many on a plant. Involucres bell-shaped, composed of several series of appressed, ovate-lanceolate pubescent bracts, somewhat purplish in color. Outer flowers of each head with threadlike corollas, three-cleft or toothed at the apex and pistillate; center flowers with five-cleft corollas.

In salt marshes along the coast from Massachusetts to Florida, Texas and Mexico. Flowering from August to October. Flowers with a faint odor of camphor.

Pearly Everlasting; Moonshine

Anaphalis margaritacea (Linnaeus) Bentham & Hooker

Plate 211b

A white-tomentose or woolly perennial herb, the erect leafy stem corymbosely branched at the summit, 1 to 3 feet high. Leaves alternate, entire, linear-lanceolate, sessile, revolute on the margins, green but pubescent above and woolly beneath, 3 to 5 inches long. Heads of flowers numerous in a compound corymb, 2 to 8 inches broad, each head one-fourth to one-third of an inch broad when expanded; involucres campanulate, their bracts ovate-lanceolate, blunt, pearly white; flowers cream-colored becoming yellowish; the staminate flowers with a slender or filiform corolla, an undivided style and pappus bristles not thickened at the summit or scarcely so; pistillate flowers with a tubular five-toothed corolla, two-cleft style and a pappus of distinct capillary bristles which fall away separately.

A common plant, often present as a weed in fields and meadows, throughout nearly the entire United States and Canada, except the extreme north. Flowering in July and August.

The dry, chaffy character of the involucres of the heads suggests the appropriate name of Everlasting. Clusters may be gathered and placed in a vase or other receptacle without water and kept for an indefinite period. They are sometimes subjected to various dyes but it is doubtful if this adds anything to their attractiveness. In florists' shops they are frequently seen dyed a brilliant red or blue.

Elecampane; Horseheal

Inula helenium Linnaeus

Plate 250

A large, woolly, perennial herb, with a stout, thick mucilaginous root. Stems stout, usually unbranched, 2 to 6 feet high and densely woolly-pubescent. Leaves alternate, rough-hairy above, densely woolly on the under surface; basal leaves large, 10 to 20 inches long, 4 to 8 inches wide, narrowed into long petioles; upper leaves sessile or clasping the stem by a heart-shaped base, smaller than the basal leaves. Heads of flowers large and showy, 2 to 4 inches broad, yellow, terminal on stout peduncles, the inflorescence consisting of few or several heads. Involucres hemispheric, nearly an inch high, their outer bracts large and almost leaflike in character. Ray flowers numerous, linear, 1 to 1½ inches long, yellow; the disk flowers dingy yellow or brownish.

Along roadsides and in fields, Nova Scotia to Ontario and Minnesota, south to North Carolina and Missouri. Flowering from July to September. Native of Europe and naturalized in this country.

Cup Plant; Indian Cup

Silphium perfoliatum Linnaeus

Plate 251

A tall, perennial herb, with resinous juice. Stem usually smooth, square, branched above, 4 to 8 feet high. Leaves opposite, ovate or

A. NARROW-LEAVED OR SWAMP SUNFLOWER
Helianthus angustifolius

B. SPICY OR SALT-MARSH FLEABANE
Pluchea camphorata

ELECAMPANE; HORSEHEAL

Inula helenium

CUP PLANT; INDIAN CUP
Silphium perfoliatum

deltoid-ovate, the upper ones united around the stem, the lower leaves abruptly contracted into margined petioles. Rather thin in texture, usually rough on both surfaces, the margins coarsely angulate-dentate or the upper ones often entire, the larger leaves 6 to 12 inches long and 4 to 8 inches wide. Heads numerous, yellow, nearly flat, 2 to 3 inches broad, composed of yellow ray flowers and disk flowers, the ray flowers twenty to thirty in number, each about 1 inch long and one-sixth of an inch wide, in two or three series. Outer bracts of the involucres broadly ovate, ciliolate, foliaceous and spreading.

Moist soil, chiefly on prairies, southern Ontario to Minnesota and South Dakota, south to New Jersey, Georgia, Louisiana and Nebraska. Naturalized about New York City and in a few other localities in the east. Sometimes as an escape from cultivation.

Oxeye; False Sunflower

Heliopsis helianthoides (Linnaeus) Sweet

Plate 252

Heliopsis, the False Sunflower, differs from the true Sunflowers (Helianthus) chiefly in having both the ray and disk flowers fertile, that is, capable of producing seed. In the true Sunflowers, the ray flowers are neutral. The Oxeye or False Sunflower is 3 to 5 feet high. Leaves opposite, petioled, ovate to lanceolate, thin, rather evenly toothed on the margins, 3 to 6 inches long and 1 to $2\frac{1}{2}$ inches wide. Heads of flowers yellow, borne on long peduncles; bracts of the involucres oblong or linear-oblong, the outer ones usually longer than the inner.

In low or moist soil, usually in open places and along streams, Ontario to New York, west to Illinois and North Dakota, south to Florida and Tennessee. Flowering from July to September. Closely resembling the Pale-leaved Wood Sunflower.

Thin-leaved Coneflower

Rudbeckia triloba Linnaeus

Plate 253

Similar in appearance to the Black-eyed Susan (Rudbeckia hirta), but more branched and with smaller heads of flowers. It is rather tall, 2 to 5 feet high with rough and pubescent stems but scarcely hairy. Leaves thin, rough on both surfaces, bright green and the lower at least three-lobed, 2 to 4 inches long, one-half to 1 inch wide. Heads about 2 inches broad, numerous, in terminal corymbs. Ray flowers bright yellow, sometimes orange or orange-purple at the base, eight to twelve in number; disk flowers purple, forming an ovoid center to the head, about one-half of an inch broad. Bracts of the involucres linear, pubescent and reflexed.

In moist soil, southern New York to Georgia, west to Michigan, Minnesota, Missouri, Kansas and Louisiana. Flowering from June to October.

Black-eyed Susan; Yellow Daisy

Rudbeckia hirta Linnaeus

Plate 254

A coarse, native biennial, or sometimes annual, with rough, hairy stems and foliage, the stems rather bristly-hairy, 1 to 3 feet high. Leaves thick, sparingly toothed or entire, oblong to lanceolate, the lower ones petioled, 2 to 7 inches long, one-half to 2 inches wide, the upper leaves sessile and narrower than the lower ones. Heads of flowers very showy, usually few or several borne on stout terminal and axillary stalks, each head 1½ to 3 inches broad. Disk flowers purple-brown, forming a cone-shaped center to the head. Ray flowers ten to twenty in number, orange-yellow in color, or sometimes purplish brown or reddish at the base. Bracts of the involucres hairy, spreading or reflexed, much shorter than the ray flowers.

Native of the plains and prairies of the western states, now well estab-

OXEYE; FALSE SUNFLOWER

Heliopsis helianthoides

THIN-LEAVED CONEFLOWER
Rudbeckia triloba

BLACK-EYED SUSAN; YELLOW DAISY

Rudbeckia hirta

lished in meadows and fields throughout the east. Flowering from June to August. In meadows and hay fields it is frequently an obnoxious weed.

The Common White Daisy (Chrysanthemum leucanthemum Linnaeus), perhaps even more abundant in meadows and fields, with its bright yellow center and white ray flowers, needs no description or illustration for its identification. Native of Europe and introduced very early into America and now thoroughly established in the northeastern states.

Tall or Green-headed Coneflower

Rudbeckia laciniata Linnaeus

Plate 255

Stems tall, leafy and much branched, sometimes 10 or 12 feet tall, from a perennial root. Leaves thin in texture, minutely hairy above and on the margins, both basal and upper leaves pinnately divided and toothed, the lower into three to seven segments and long petioled, the upper leaves into three to five lobes and short petioled or sessile. Heads 3 to 4 inches broad. Ray flowers yellow, six to ten in number, surrounding the columnar, dull greenish-yellow disk which becomes oblong-shaped in fruit and two or more times as long as thick.

Moist thickets and low woods, especially along streams, Quebec to Manitoba and Idaho, south to Florida, Colorado and Arizona. Flowering from July to September.

This plant is the origin of the Golden Glow, a common garden variety in which the disk flowers are all transformed into ray flowers.

Narrow-leaved or Swamp Sunflower

Helianthus angustifolius Linnaeus

Plate 249a

Easily distinguished from the other Sunflowers by its narrow, linear leaves and yellow heads with purplish disks. Perennial by slender rootstocks; stem rough, 2 to 7 feet high; slender and branched above, usually somewhat hairy below. Leaves firm and tough, slightly rough, linear, entire and sessile, 2 to 7 inches long, one-sixth to one-third of an inch wide,

the margins becoming revolute with age or in drying. Lower leaves opposite, the upper ones alternate. Heads with twelve to twenty yellow ray flowers and a purplish disk, the entire head 2 to 3 inches broad. Bracts of the involucres linear-lanceolate and pubescent, their tips scarcely spreading. Chaff of the receptacle entire or three-toothed. Pappus usually two short awns.

In swamps mainly near the coast, Long Island to Florida, Kentucky and Texas. Flowering from August to October.

Tall, Giant or Wild Sunflower

Helianthus giganteus Linnaeus

Plate 256

Stems tall and rather stiff, hairy and rough to the touch, 3 to 12 feet high, often purplish, perennial by fleshy roots and creeping rootstocks. Leaves sessile or short petioled, firm, lanceolate, very rough above, margins serrate, long pointed at the apex, narrowed at the base, opposite or alternate, 2 to 6 inches long, one-half to 1 inch wide. Heads of flowers on long peduncles, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches broad. Ray flowers ten to twenty in number, surrounding the yellow or yellowish brown disk. Bracts of the involucres lanceolate, ciliate, with slender, spreading tips. Receptacle chaffy, the chaff oblong-linear and pointed.

In swamps and wet meadows, Maine to Ontario and Saskatchewan, south to Florida, Louisiana and Colorado. Especially abundant in swamps and marshes along the coast. Flowering from August to October.

Rough or Woodland Sunflower

Helianthus divaricatus Linnaeus

Plate 257

A slender perennial with erect stems, 2 to 7 feet high from perennial roots and rootstocks; smooth nearly to the summit. Leaves rough on the upper surface, lanceolate or ovate-lanceolate in shape, tapering at the apex to a long point, 3 to 8 inches long, one-fourth to one-half of an inch

TALL OR GREEN-HEADED CONEFLOWER

Rudbeckia laciniata

TALL, GIANT OR WILD SUNFLOWER
Helianthus giganteus

ROUGH OR WOODLAND SUNFLOWER
Helianthus divaricatus

wide, toothed, sessile and usually opposite, spreading at right angles from the stem. Heads of flowers yellow, about 2 inches broad; bracts of the involucres ovate-lanceolate or lanceolate, the outer ones spreading.

In dry woodlands, thickets and roadsides, Maine and Ontario to Manitoba, south to Florida, Louisiana and Nebraska. Flowering from July to September.

Hairy Wild Sunflower

Helianthus mollis Lamarck

Plate 258

A tall, perennial plant, with densely soft-hairy stem and downy-pubescent leaves. Stem stout, usually but sparingly branched. Leaves ovate with a heart-shaped base closely clasping the stem, softly pubescent on both surfaces, opposite, 2 to 5 inches long, 1 to 2½ inches wide, with serrulate margins. Heads of flowers yellow, 2 to 3 inches broad, borne solitary on few or several stout peduncles. Disk yellow, about 1 inch broad, surrounded by the numerous bright yellow ray flowers. Bracts of the involucre lanceolate, somewhat spreading and canescent with whitish hairs.

In dry or barren soil, Massachusetts to Iowa, Missouri and Kansas, south to Georgia and Texas. Flowering in August and September.

Pale-leaved Wood Sunflower

Helianthus strumosus Linnaeus

Plate 259

Perennial by branched and sometimes tuberous-thickened rootstock; stems smooth, sometimes glaucous below and branched above, usually somewhat pubescent, 3 to 7 feet high. Leaves short petioled, ovate to ovate-lanceolate, rough above, pale beneath, the margins serrate, 3 to 8 inches long, 1 to 2½ inches wide, mostly opposite, sometimes the upper ones alternate. Heads yellow, 2½ to 4 inches broad, consisting of from five to fifteen neutral ray flowers surrounding the yellow disk flowers. Bracts of the involucres lanceolate and ciliate. Receptacle with pubescent chaff.

In dry woods and on banks, Maine and Ontario to Minnesota, south to Georgia, Tennessee and Arkansas. Flowering from July to September.

Lance-leaved Tickseed

Coreopsis lanceolata Linnaeus

Plate 260a

An erect, perennial herb, 1 to 2 feet high, stems slender, striate, smooth or more or less pubescent, especially below. Leaves smooth or somewhat hairy, opposite; the basal and lower stem leaves spatulate or oblong, entire, sometimes with a pair of lateral lobes, 2 to 6 inches long, on slender petioles; upper stem leaves few, lanceolate to oblong, nearly sessile. Heads of flowers usually few, $1\frac{1}{2}$ to $2\frac{1}{2}$ inches broad, showy, bright yellow, borne on long, slender peduncles often 8 to 12 inches long. Involucres rather flattened, their bracts ovate-lanceolate, in two series, the outer narrower than the inner but nearly as long. Ray flowers six to ten in number, wedge-shaped, three to seven-notched at the apex, forming a single row around the darker yellow disk. Achenes oblong, winged on the edges, with two short teeth projecting from the summit, giving it somewhat the appearance of a bug. It is from this character of the achene that the generic name Coreopsis, meaning " buglike," is derived.

In moist or dry soil, Ontario to Michigan, south to New York, Virginia, Florida, Louisiana and Missouri. Flowering from June to August.

Small Rose or Pink Tickseed

Coreopsis rosea Nuttall

Plate 261b

Stems slender, smooth, wiry, erect or at least the tips ascending, 6 to 24 inches high, perennial by slender, creeping rootstocks, usually much branched and smooth. Leaves opposite, linear, entire, 1 to $2\frac{1}{2}$ inches long, sessile. Heads of flowers small, one-half to 1 inch broad or less, on slender peduncles. Each head consisting of four to eight pink or rose-purple rays, oblong to obovate and slightly three-toothed or sometimes entire, sur-

HAIRY WILD SUNFLOWER
Helianthus mollis

PALE-LEAVED WOOD SUNFLOWER

Helianthus strumosus

A. LANCE-LEAVED TICKSEED
Coreopsis lanceolata

B. YARROW; MILFOIL
Achillea millefolium

rounding the yellow disk. Bracts of the involucre in two series, the inner oblong and longer than the outer lanceolate bracts. Achenes (seeds) oblong, not winged, the pappus reduced to a very short truncate crown.

Open swamps near the coast, Massachusetts to Georgia. Flowering in July and August.

Small or Nodding Bur Marigold

Bidens cernua Linnaeus

Plate 262

An annual, with erect or partially prostrate stems, smooth or hispid and usually much branched, from a few inches to 3 feet high. Leaves sessile, opposite, usually somewhat united around the stem. Lanceolate to oblong-lanceolate in shape, coarsely and sharply toothed, smooth, long pointed, 3 to 6 inches long, one-fourth to 1 inch wide. Heads numerous, at least on vigorous plants, globose, short-stalked, one-half to 1 inch broad, nodding after or during flowering, consisting of six to ten short, yellow ray flowers, one-fourth to one-half of an inch long, surrounding the globose, yellow or brownish-yellow disk. Very often the ray flowers are absent. Bracts of the involucre in two series, the outer green and leaflike and much larger than the membranaceous, yellowish-margined inner bracts. Seed a wedge-shaped achene, about one-sixth of an inch long, retrorsely hispid on the margins, and with usually four downwardly barbed awns at the summit.

In wet soil and swamps, Nova Scotia to Hudson bay and British Columbia south to North Carolina, Missouri and California. Also found in Europe. Flowering from July to October. Dwarf forms are frequent.

Sneezeweed; False or Swamp Sunflower

Helenium autumnale Linnaeus

Plate 261a

Stems stout and branching, 2 to 6 feet high, aromatic and resinous, from a perennial root. Leaves firm, oblong-lanceolate, narrowed to a sessile base and pointed at the apex, usually toothed, 2 to 5 inches long,

one-fourth to 2 inches wide, the bases of the leaves decurrent on the stems, and making the stem appear wing-angled. Inflorescence composed of yellow heads of flowers on long peduncles; each head with ten to eighteen drooping ray flowers, wedge-shaped and three-notched at the apex, surrounding the globose, darker yellow disk.

In swamps, wet meadows and along streams, Quebec to Manitoba and Oregon, south to Florida and Louisiana. Flowering from August to October. The far western form is sometimes regarded as a distinct species.

Yarrow; Milfoil

Achillea millefolium Linnaeus

Plate 260b

A very common weed, found everywhere; the feathery, finely dissected leaves, when the plant is small and not in flower, often mistaken by those not acquainted with it for fern leaves. It is perennial by means of rootstocks. Leaves lanceolate or oblong in outline, very finely dissected into narrow, pinnatifid segments. Inflorescence consists of dense, flat-topped clusters of numerous, small, white heads (sometimes pink or purplish), one-sixth to one-fourth of an inch broad, borne on erect stems 6 to 18 inches high. Disk flowers yellow, surrounded by four to six gray-white, or sometimes pink or purplish ray flowers; both ray and disk flowers fertile. Entire plant aromatic and pungent, but bitter to the taste.

Waste ground, fields, roadsides and various other situations throughout eastern North America; naturalized from Europe, where it is native. Flowering from June to November.

Golden Ragwort; Swamp Squawweed

Senecio aureus Linnaeus

Plate 263

Stems slender, smooth, erect, 6 to 28 inches high, solitary or tufted from a perennial, strong-scented root. Basal leaves ovate, orbicular or oblong-ovate, heart-shaped at the base and long petioled, usually pointed

A. SNEEZEWEED; FALSE OR SWAMP SUNFLOWER
Helenium autumnale

B. SMALL ROSE OR PINK TICKSEED
Coreopsis rosea

SMALL OR NODDING BUR MARIGOLD

Bidens cernua

GOLDEN RAGWORT; SWAMP SQUAWWEED

Senecio aureus

SWAMP THISTLE
Cirsium muticum

at the apex, the margins crenately toothed, 1 to 6 inches long; lower stem leaves lanceolate or oblong, usually deeply cut or cleft, the upper leaves small, sessile and clasping the stem. Heads of flowers numerous, on slender peduncles, forming an open corymb, bright golden yellow; each head one-half to three-fourths of an inch broad and one-third to one-half of an inch high. Ray flowers eight to twelve in number, linear-lanceolate; pappus white.

In wet meadows, marshes and swamps, Newfoundland to Ontario and Michigan, south to Florida, Texas and Missouri. Flowering from late in May to July or August.

Swamp Thistle

Cirsium muticum Michaux

Plate 264

An erect, biennial, prickly herb, with spiny leaves and smooth stem, 3 to 8 feet high, slender, leafy, striate and branching above. When young the stem is woolly or hairy, becoming smooth when older. Leaves when young, densely white tomentose on the under surface, becoming glabrous when mature and then green on both sides, or somewhat hairy on the upper surface, deeply pinnatifid into lanceolate or oblong, toothed, spiny segments tipped with slender prickles. Basal leaves petioled, 4 to 8 inches long, upper leaves sessile and smaller. Inflorescence consisting of a solitary or several large terminal heads of flowers, about 1½ inches broad and as high, on naked peduncles or the peduncles with a few small, bractlike leaves. Flowers all tubular, and purple in color. Involucre of the heads glutinous and webby, composed of closely appressed bracts, the outer ones ovate or ovate-lanceolate, the inner linear-lanceolate, pointed and all of them unarmed or without prickles.

Common in swamps and moist soil, Newfoundland to Saskatchewan, south to Florida and Texas. Flowering from July to October.

LIST OF ILLUSTRATIONS OF WILD FLOWERS

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